309 Pages

FORM NIS-1 OWNERS' DATA REPORT FOR INSERVICE INSPECTIONS

As required by the Provisions of the ASME Code Rules

1. Owner Duke Power Company, 422 S. Church St., Charlotte,NC 28201
(Name and Address of Owner)

2. Plant Oconee Nuclear Station, Highway 130/183, Seneca,SC 29679
(Name and Address of Plant)

3. Plant Unit 1 4. Owner Certificate of Authorization (if required) N/A

5. Commercial Service Date 7-15-73 6. National Board Number for Unit N/A

7. Components Inspected

Component or Appurtenance	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
SEE SECTION 1 PARAGRAPH 1.5 IN THE ATTACHED REPORT.				

Note: Supplemental sheets in form of lists, sketches, or drawings may be used provided (1) size is 8½ in. x 11 in., (2) information in items 1 through 6 on this data report is included on each sheet, and (3) each sheet is numbered and the number of sheets is recorded at the top of this form.

FORM NIS-1 (back)

8. Examination Dates 02-13-89 to 06-04-90 9. Inspection Interval from 03-01-84 to 03-01-94

10. Abstract of Examinations. Include a list of examinations and a statement concerning status of work required for current interval. See Attached Report

11. Abstract of Conditions Noted. See Attached Report

12. Abstract of Corrective Measures Recommended and Taken See Attached Report

We certify that the statements made in this report are correct and the examinations and corrective measures taken conform to the rules of the ASME Code, Section XI.

Date 8-9 19 90 Signed Duke Power Co. By L R Davies
Owner

Certificate of Authorization No. (if applicable) N/A Expiration Date N/A

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of NORTH CAROLINA and employed by *The HSBI&I Co. of HARTFORD CT. have inspected the components described in this Owners' Data Report during the period 02-13-89 to 06-04-90, and state that to the best of my knowledge and belief, the Owner has performed examinations and taken corrective measures described in this Owners' Data Report in accordance with the requirements of the ASME Code, Section XI.

By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations and corrective measures described in this Owners' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date Aug. 9 19 90

Rayford F Elgin Commissions NC 828
Inspector's Signature National Board, State, Province and No.

*The Hartford Steam Boiler Inspection & Insurance Co.
1117 Perimeter Center W.
Suite E-301
Atlanta, Ga 30338

INSERVICE INSPECTION REPORT

UNIT 1 OCONEE 1990 REFUELING OUTAGE 12

Location: Oconee County, South Carolina
NRC Docket No. 50-287
Commercial Service Date: July 15, 1973

Owner: Duke Power Company
422 S. Church St.
Charlotte, N. C. 28201

Revision 0

Prepared By: A. J. Hogge, JE. Date 7-30-90

Reviewed By: T. C. Tucker Date 8-7-90

Approved By: G. B. Hagan Date 8/9/90

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1.0 Summary of Inservice Inspection

This report describes the Inservice Inspection of Duke Power Company's Oconee Nuclear Station Unit 1 during the 1990 Refueling Outage (also referred to as Outage 12).

Included in this report are the final Inservice Inspection Plan, the inspection results for each item, a summary for each category of examination and corrective action taken when unacceptable conditions were found. In addition, there is a section included for repairs and replacements required since February 13, 1989.

1.1 Class 1 Inspection

The Class 1 Inservice Inspection included examinations on the Reactor Vessel Closure Head Circumferential Weld, Reactor Vessel Head to Flange Weld, Reactor Vessel Closure Head CRDM Housing Welds. Also, Steam Generator 1B Upper and Lower Head to Tubesheet Welds, Steam Generator 1A Support Skirt to Head Weld, Letdown Cooler 1A Outlet Channel Body to End Plate Weld, and Letdown Cooler 1A Tubeside Outlet Nozzle Weld and Inside Radius Section received examinations. Dissimilar Metal Butt Welds in Reactor Coolant System were examined. Reactor Coolant Pump 1A2 Main Flange Bolts, Lower Seal Housing Bolts, and Decay Heat Emergency Dump Valves Bolting also received examinations. Pressurizer Support Lug to Shell Welds were examined. In addition, Piping Welds in Reactor Coolant, High Pressure Injection and Low Pressure Injection Systems were examined. Piping integrally-welded attachment weld of the Low Pressure Injection System was also examined.

Visual examinations were performed on the Class 1 Pressure Boundary during System Leakage Tests. Also, visual examinations were performed on Class 1 Component Supports of the High Pressure Injection and Low Pressure Injection Systems.

The Inconel 600 tubing in Steam Generators 1A and 1B was inspected by eddy current during Outage 12. The results of the inspections are shown in Section 5 of this report.

Reportable indications were found on the Class 1 Inspections shown in this section. Inspection and evaluation data for each reportable indication found on Class 1 Inspections is included in Section 5 of this report.

A detailed description of each inspection is found in the final Inservice Inspection Plan in Section 3 of this report. Results of each examination are found in Section 4.

1.2 Class 2 Inspection

The Class 2 Inspections included examinations on Steam Generator 1B Shell to Shell Weld, piping integrally-welded attachments of Main Steam, Main Feedwater, Low Pressure Injection and Reactor Building Spray Systems, and on Main Steam Stop Valve Bolting. Also included were examinations on

circumferential butt welds of the Low Pressure Injection, Reactor Building Spray and High Pressure Injection Systems. Also, Longitudinal Welds of the Reactor Building Spray and Low Pressure Injection Systems were examined.

Visual examinations were performed on the Class 2 Pressure Boundary during system functional tests. Also, visual examinations were performed on Class 2 Components of the Main Steam, Main Feedwater, Auxiliary Feedwater, High Pressure Injection, Low Pressure Injection and Reactor Building Spray Systems.

A detailed description of each inspection is found in the final Inservice Inspection Plan in Section 3 of this report. Results of each examination are found in Section 4.

1.3 Augmented Inspection

There were no augmented inspections performed at Oconee 1 during Outage 12.

1.4 Alternate Examination

Alternate examination at Oconee 1 was performed on integrally-welded piping attachment for Support No. 03-0-480A-H9B (Item No. C03.040.038). A detailed description of the examination is found in the final Inservice Inspection Plan in Section 3 of this report. Results are found in Section 4.

1.5 Identification Numbers

Owner: Duke Power Company, 422 S Church St., Charlotte, NC 28201
Plant: Oconee Nuclear Station, Highway 130/183, Seneca, SC 29679
Plant Unit: 1
Owner Certificate of Authorization: N/A
Commercial Service Date: 7-15-73

Item	Manufacturer or Installer	Manufacturer or Installer Serial No.	State or Province No.	National Board No.
Reactor Vessel	Babcock & Wilcox	620-0003-51-52	N/A	N-101
Steam Generator A	Babcock & Wilcox	620-0003-55-1	N/A	N-103
Steam Generator B	Babcock & Wilcox	620-0003-55-2	N/A	N-104
Pressurizer	Babcock & Wilcox	620-0003-59	N/A	N-102

1.6 Authorized Nuclear Inservice Inspector(s)

Name: R. F. Elgin R. F. Elgin
Employer: The Hartford Steam Boiler Inspection & Insurance Company
Business Address: The Hartford Steam Boiler Inspection & Insurance Company
1117 Perimeter Center W., Suite E-301
Atlanta, GA 30338

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 CLASS 1 REPORTABLE ITEMS OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B02.011.000	***PRESSURIZER	SHELL TO HEAD WELDS CIRCUMFERENTIAL*****		***	*******	*****	__.__	*****	********** **********
B02.012.000	***PRESSURIZER	WELDS********** LONGITUDINAL********		***	*******	*****	__.__	*****	********** **********
B02.040.000	*********STEAM	GENERATORS TUBESHEET TO HEAD WELDS*******		***	*******	*****	__.__	*****	********** **********
B02.040.003	1SGB-WG58-1	OM-201-1873 ISI-OCN1-004		UT	ISI-130	CS	08.500	40305	STEAM GEN 1B UPPER HEAD TO TUBESHEET PC 8 TO 51 INSP.RFO#14 PER IWB-2420(B) PIR# 1-090-0052
B02.051.000	HEAT EXCHANGER	SHELL / HEAD WELDS CIRCUMFERENTIAL ****	***** ***** *****	***	******* *******	*****	__.__	____	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **
B02.060.000	HEAT EXCHANGER	TUBESHEET TO SHELL** WELDS**********		***	*******	*****	__.__	*****	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 CLASS 1 REPORTABLE ITEMS OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B16.011.000	**** STEAM GEMERATOR	TUBING **********		***	******* *******		__.__ __.__		***** STRIGHT TUBE DESIGN **** **********
B16.011.001	1SGA-TUBES	B&W 129309E7		ET	ISI-418	INCO	00.62 00.040	*****	* SELECT CAL. STANDARD PER VOL.1, SECT. 10.2
B16.011.002	1SGB-TUBES	B&W 129309E7		ET	ISI-418	INCO	00.62 00.040	*****	* SELECT CAL. STANDARD PER VOL.1, SECT. 10.2

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 CLASS 1 REPORTABLE ITEMS OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.01.000	********** CLASS 1	SUPPORTS********** **********		***	*******	*****	__.__ __.__	*****	********** **********
F1.01.083	1-51A-H7A	0-479A		VT	QCL-14		02.50 __.__		HIGH PRESS INJ. - RIGID 51A-0-479A-H7A INSP.RFO#14 PER IWF-2420(B) PIR# 1-090-0046
F1.02.000	********** CLASS 2	SUPPORTS********** **********		***	*******	*****	__.__ __.__	*****	********** **********
F1.03.000	********** CLASS 3	SUPPORTS ********** **********		***	*******		__.__ __.__		********** **********

2.0 Status of Required Inspections

The completion status of inspections required by the 1980 ASME Code Section XI, including addenda through Winter 1980, is summarized in this section. The requirements are listed by the ASME Section XI examination category as defined in Table IWB-2500-1 for Class 1 Inspections, in IWC-2500-1 for Class 2 Inspections. Augmented and alternate inspections are also included.

Class 1 Inspections

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	Deferral Allowed
B-A	Pressure Retaining Welds in Reactor Vessel	15 Welds	2.333 Welds	15.55%	Yes
B-B	Pressure Retaining Welds in Vessels Other than Reactor Vessel	15 Welds	9 Welds	60%	No
B-D	Full Penetration Welds of Nozzles in Vessels	60 Inspections	31 Inspections	51.66%	Partial
B-E	Pressure Retaining Partial Penetration Welds in Vessels	31 Welds	31 Welds	67% Credited	No
B-F	Pressure Retaining Dissimilar Metal Welds	38 Welds	21 Welds	55.26%	No
B-G-1	Pressure Retaining Bolting Greater than 2 Inch Diameter	425 Items	231 Items	54.35%	Yes
B-G-2	Pressure Retaining Bolting 2 Inches and Less in Diameter	*38 Connections	25 Connections	65.78%	No
B-H	Integral Attachment for Vessels	12 Attachments	7 Attachments	58.33%	No
B-J	Pressure Retaining Welds in Piping	115 Welds	72 Welds	62.60%	No

*Total connections include CRDMs that are disassembled

Class 1 Inspections (Continued)

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	Deferral Allowed
B-K-1	Integral Attachments for Piping, Pumps and Valves	3 Attachments	2 Attachments	66.66%	No
B-L-1	Pressure Retaining Welds in Pump Casings	1 Weld	None	0%	Yes
B-L-2	Pump Casings	1 Casing	None	0%	Yes
B-M-1	Pressure Retaining Welds in Valve Bodies	None	N/A	N/A	N/A
B-M-2	Valve Body > 4 in. Nominal Pipe Size	2 Valves	1 Valve	50%	Yes
B-N-1	Interior of Reactor Vessel	3 Items	2 Items	66.66%	No
B-N-2	Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels	None	N/A	N/A	N/A
B-N-3	Removable Core Support Structures	1 Item	None	0%	Yes
B-O	Pressure Retaining Welds in Control Rod Housings	3 Housings	2 Housings	66.66%	Yes
B-P	All Pressure Retaining Components				No
	System Leakage Test	112 Components	93 Components	73.03%	
	System Hydrostatic Test	19 Components	0 Components	0%	
B-Q	Steam Generator Tubing	100% Station Technical Specifications Met			N/A
F1.01	Class 1 Component Supports	92 Supports	58 Supports	63.04%	No

Class 2 Inspections

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	Deferral Allowed
C-A	Pressure Retaining Welds in Pressure Vessels	10 Welds	6 Welds	60%	No
C-B	Pressure Retaining Nozzle Welds in Vessels	5 Welds	3 Welds	60%	No
C-C	Integral Attachments for Vessels, Piping, Pumps and Valves	57 Attachments	37 Attachments	64.91%	No
C-D	Pressure Retaining Bolting Exceeding 2 Inches in Diameter	1 Item	1 Item	100% Credited	No
C-F	Pressure Retaining Welds in Piping	250 Welds	164 Welds	65.60%	No
C-G	Pressure Retaining Welds in Pumps and Valves	None	N/A	N/A	N/A
C-H	All Pressure Retaining Components				No
	System or Component Functional Test	34 Components	34 Components	100%	
	System Hydrostatic Test	54 Components	3 Components	5.55%	
F1.02	Class 2 Component Supports	317 Supports	210 Supports	66.24%	No

Augmented Inspections

Description	Percentage Complete
Reactor Coolant Pump Flywheels:	100% of Technical Specifications met
High Pressure Injection Nozzle Safe-ends	100% of requirements
Pressurizer Surge Piping Drain Nozzle	100% of requirements
Thermal Stress Piping	100% of requirements for Outages 11 & 12
Pressurizer Spray Piping Thermal Transient	100% of requirements

Alternate Inspections

Description	Percentage Complete
Main Feedwater Integrally-Welded Attachment (Item Number C03.040.038)	100% of requirements

3.0 Final Inservice Inspection Plan For Outage 12

The final ISI plan presented in this section lists all examinations credited for Outage 12 at Oconee Unit 1. This includes ASME Section XI Class 1 and 2, augmented and alternate inspections required by the plant technical specifications, NRC Bulletins and Problem Investigation Reports.

The information shown below is a field description for the reporting format included in this section of the report:

Item Number	=	ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500 (Class 2), IWD-2500-1 (Class 3), Augmented and Alternate Requirements
ID Number	=	Unique Identification Number
Drawing Number	=	Location and/or Detail Drawing
Locs.	=	Location
Insp. Req.	=	Examination Technique - Magnetic Particle, Dye Penetrant, etc.
Proc. Numbers	=	Examination Procedures
Material Type/Grade	=	General Description of Material
Diam./Thick	=	Diameter/Thickness
Calib. Block	=	Calibration Block
Comments	=	General and/or Detail Description

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B01.011.000	REACTOR VESSEL	CIRCUMFERENTIAL***** SHELL WELDS*********		***	*******	*****	__.__	*****	**********
B01.012.000	REACTOR VESSEL	LONGITUDINAL******** SHELL WELDS*********		***	*******	*****	__.__	*****	**********
B01.021.000	REACTOR VESSEL	HEAD WELDS********** CIRCUMFERENTIAL*****		***	*******	*****	__.__	*****	**********
B01.021.001B	1RPV-WH5	OM-201-1122 ISI-OCN1-001		UT	ISI-130	CS	07.500	40387	CLOSURE HEAD PC 23 TO 24 240 TO 0 DEGREES
B01.030.000	REACTOR VESSEL	SHELL TO FLANGE WELD **********		***	*******	*****	__.__	*****	**********
B01.040.000	REACTOR VESSEL	HEAD TO FLANGE WELDS **********		***	*******	*****	__.__	*****	**********
B01.040.001B	1RPV-WH7	OM-201-1122 ISI-OCN1-001		UT	ISI-130	CS	07.500	40387	PC 22 TO 23 240 TO 0 DEGREES
B01.040.002B	1RPV-WH7	OM-201-1122 ISI-OCN1-001		MT	NDE-25	CS	07.500	-----	PC 22 TO 23 240 TO 0 DEGREES

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B02.011.000	***PRESSURIZER	SHELL TO HEAD WELDS CIRCUMFERENTIAL*****		***	*******	*****	__.__ __.__	*****	********** **********
B02.012.000	***PRESSURIZER	WELDS********** LONGITUDINAL********		***	*******	*****	__.__ __.__	*****	********** **********
B02.040.000	*********STEAM	GENERATORS TUBESHEET TO HEAD WELDS*******		***	*******	*****	__.__ __.__	*****	********** **********
B02.040.003	1SGB-WG58-1	OM-201-1873 ISI-OCN1-004		UT	ISI-130	CS	08.500	40305	STEAM GEN 1B UPPER HEAD TO TUBESHEET PC 8 TO 51 INSP.RFO#14 PER IWB-2420(B) PIR# 1-090-0052
B02.040.004	1SGB-WG58-2	OM-201-1873 ISI-OCN1-004		UT	ISI-130	CS	08.500	40305	STEAM GEN 1B LOWER HEAD TO TUBESHEET PC 7 TO 50 INSP.RFO#12 PER IWB-2430(A)
B02.051.000	HEAT EXCHANGER	SHELL / HEAD WELDS CIRCUMFERENTIAL ****	***** ***** *****	***	******* *******	*****	__.__ __.__	-----	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **
B02.051.002	1-LDCA-OUT-V6	OM-201-2933		UT	ISI-120	SS	08.62 00.875	40411	LDC-A OUT.CHNL.BODY TO END PLT PC.3 TO 4,INSPECTOR RECORD S\N
B02.060.000	HEAT EXCHANGER	TUBESHEET TO SHELL** WELDS**********		***	*******	*****	__.__ __.__	*****	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **

PROGRAM: NISIRUNB-QAISI02
FILE: C007133
PLANT: OCONEE UNIT 1
KEY: ITEM NUMBER B03

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B03.090.000	REACTOR VESSEL	NOZZLE TO VESSEL**** WELDS**********		***	******* *******		__.__ __.__		********** **********
B03.100.000	REACTOR VESSEL	*******NOZZLE INSIDE RADIUS SECTION******		***	*******	*****	__.__ __.__	*****	********** **********
B03.110.000	***PRESSURIZER	NOZZLE TO VESSEL**** WELDS**********		***	*******	*****	__.__ __.__	*****	********** **********
B03.120.000	***PRESSURIZER	NOZZLE INSIDE RADIUS SECTION**********		***	*******	*****	__.__ __.__	*****	********** **********
B03.130.000	*********STEAM	GENERATOR NOZZLE TO VESSEL WELDS********		***	*******	*****	__.__ __.__	*****	********** **********
B03.140.000	*********STEAM	GENERATOR NOZZLE INSIDE RADIUS*******		***	*******	*****	__.__ __.__	*****	********** **********
B03.150.000	HEAT EXCHANGER	NOZZLE TO VESSEL WELDS**********		***	*******	*****	__.__ __.__	*****	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **
B03.150.002	1-LDCA-OUT-V2	OM-201-2933		UT	ISI-120	SS	03.00 00.875	40411	LDC-A TUBESIDE OUT.NOZ. PC.5 TO 3, INSPECTOR RECORD S\N

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B03.160.000	HEAT EXCHANGER	NOZZLE INSIDE RADIUS SECTION**********		***	*******	*****	__.__ __.___	*****	**** INSPECTOR TO RECORD ***** ** COOLER S\N ON INSP. DATA **
B03.160.002	1-LDCA-OUT-V2	OM-201-2933		UT	ISI-120	SS	03.00 00.875	40411	LDC-A OUT.NOZ. INSIDE RADIUS PC.5 TO 3,INSPECTOR RECORD S\N

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B04.012.000	*******PARTIAL	PENETRATION********* CRD NOZZLES*********	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	INSPECT AND DOCUMENT 100 % OF NOZZLE WELDS ON NPD PROCEDURE
B04.013.000	*******PARTIAL	PENETRATION********* INSTRUMENTATION*****	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	INSPECT AND DOCUMENT 100 % OF NOZZLE WELDS ON NPD PROCEDURE

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B05.010.000	REACTOR VESSEL	NOZZLE TO SAFE END** BUTT WELDS**********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE > 4 INCH**** **********
B05.020.000	***PRESSURIZER	NOZZLE TO SAFE END** BUTT WELDS**********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE > 4 INCH**** **********
B05.021.000	******** PRESSURIZER	NOZZLE-TO-SAFE END BUTT WELDS *********		***	*******	____	__.__ __.___	____	NOMINAL PIPE SIZE < 4 INCHES **********
B05.050.000	CLASS 1 PIPING	DISSIMILAR METAL**** BUTT WELDS**********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE 4 IN. & OVER **********
B05.050.003	1PIA2-7	OM-201-1845 ISI-OCN1-008		UT	ISI-119 ISI-120	CS/SS	33.50 03.000	40350	A2 SUCT PUMP SAFE END TO PIPE UT FROM PIPE SIDE
B05.050.003A	1PIA2-7	OM-201-1845 ISI-OCN1-008		UT	ISI-119	CS/SS	33.50 03.000	40397	A2 SUCT PUMP SAFE END TO PIPE UT FROM SAFE END SIDE
B05.050.003B	1PIA2-7	OM-201-1845 ISI-OCN1-008		PT	NDE-35	CS/SS	33.50 03.000	-----	A2 SUCTION PUMP SAFE END TO PIPE PC 210 TO 215
B05.050.004	1PDA2-2	OM-201-1844 ISI-OCN1-012		UT	ISI-119 ISI-120	CS/SS	33.50 03.000	40350	A2 DISCH. PUMP SAFE END TO ELBOW UT FROM ELBOW SIDE

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B05.050.004A	1PDA2-2	OM-201-1844 ISI-OCN1-012		UT	ISI-119	CS/SS	33.50 03.000	40397	A2 DISCH. PUMP SAFE END TO ELBOW UT FROM SAFE END SIDE
B05.050.004B	1PDA2-2	ISI-OCN1-012 OM-201-1844		PT	NDE-35	SS/CS	33.50 03.000	-----	A2 DISCHARGE PUMP SE TO ELBOW PC 212 TO 213
B05.050.012	1PHA-17	ISI-OCN1-005		UT	ISI-119	CS/IN	10.00 01.000	40399	SURGE NOZ. SE, UT NOZ. SIDE INSP. WITH B05.050.009
B05.050.012A	1PHA-17	ISI-OCN1-005		UT	ISI-119	CS/IN	10.00 01.000	40399	SURGE NOZ. SE, UT PIPE SIDE INSP. WITH B05.050.009A
B05.050.012B	1PHA-17	ISI-OCN1-005		PT	NDE-35	CS/IN	10.00 01.000		SURGE NOZ. SAFE END INSP. WITH B05.050.009B
B05.051.000	CLASS 1 PIPING	DISSIMILAR METAL**** BUTT WELDS**********		***	*******	*****	__.__ __.__	*****	NOMINAL PIPE SIZE < 4 INCH**** **********

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B06.010.000	REACTOR VESSEL	CLOSURE HEAD NUTS*** **********		***	*******	*****	__.__	*****	********** **********
B06.030.000	REACTOR VESSEL	CLOSURE STUDS******* **********		***	*******	*****	__.__	*****	WHEN REMOVED********** **********
B06.040.000	REACTOR VESSEL	THREADS IN FLANGE*** **********		***	*******	*****	__.__	*****	********** **********
B06.050.000	REACTOR VESSEL	CLOSURE WASHERS AND* BUSHINGS**********		***	*******	*****	__.__	*****	********** **********
B06.060.000	***PRESSURIZER	BOLTING********** **********		***	*******	*****	__.__	*****	********** **********
B06.070.000	***PRESSURIZER	FLANGE SURFACES***** **********		***	*******	*****	__.__	*****	INSPECT WHEN CONNECTION DISASSEMBLED
B06.080.000	***PRESSURIZER	NUTS, BUSHINGS, AND WASHERS**********		***	*******	*****	__.__	*****	********** **********
B06.180.000	*CLASS 1 PUMPS	BOLTS AND STUDS***** **********		***	*******	*****	__.__	*****	GREATER THAN 2 INCH********** **********

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B06.180.002	1RCP-1A2-F	OM-201D-34		UT	NDE-44	CS	04.32 28.000	40363	A2 RC PUMP MN FLG BOLTS PC. 19 TOTAL 24 BOLTS
B06.190.000	*CLASS 1 PUMPS	FLANGE SURFACE******		***	*******	*****	__.__	*****	WHEN CONNECTION DISASSEMBLED**
B06.200.000	*CLASS 1 PUMPS	NUTS, BUSHINGS, AND WASHERS**********		***	*******	*****	__.__	*****	**********

DUKE POWER COMPANY
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OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B07.020.000	***PRESSURIZER	BOLTS,STUDS,AND NUTS **********		***	*******	*****	__.__	*****	********** **********
B07.030.000	*********STEAM	GENERATOR********** BOLTS,STUDS,AND NUTS		***	*******	*****	__.__	*****	********** **********
B07.060.000	*CLASS 1 PUMPS	BOLTS,STUDS,AND NUTS **********		***	*******	*****	__.__	*****	********** **********
B07.060.002	1RCP-1A2-S	OM-201D-34 ----------		VT1	QCL-13	CS	02.00 08.000	-----	PC. 26 LWR SEAL HOUSING BOLTS 12 CAP SCREWS
B07.070.000	CLASS 1 VALVES	BOLTS,STUDS,AND NUTS **********		***	*******	*****	__.__	*****	********** **********
B07.070.017	1-53A-LP104	OM-245-1255		VT1	QCL-13	-----	03.00	-----	DECAY HEAT EMERGENCY DUMP , VLV. LP-104 BOLTING
B07.070.018	1-53A-LP103	OM-245-755		VT1	QCL-13	-----	03.00	-----	DECAY HEAT EMERGENCY DUMP , VLV. LP-103 BOLTING
B07.080.000	**CRD HOUSINGS	BOLTS,STUDS,AND NUTS **********		***	*******	*****	__.__	*****	INSPECT ONLY IF HOUSING IS**** DISASSEMBLED**********

DUKE POWER COMPANY
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PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B08.020.000	***PRESSURIZER	INTEGRALLY WELDED*** ATTACHMENTS*********		***	*******	*****	__.__ __.__	*****	********** **********
B08.020.005	1PZR-WP82-Z	OM-201-637 ISI-OCN1-002		MT	NDE-25	CS	03.500	-----	PZR SUPPORT LUG Z-AXIS
B08.020.006	1PZR-WP82-ZW	OM-201-637 ISI-OCN1-002		MT	NDE-25	CS	03.500	-----	PZR SUPPORT LUG Z-W AXIS
B08.030.000	STEAM GEN.	***INTEGRALLY WELDED ATTACHMENTS*********		***	*******	*****	__.__ __.__	*****	********** **********
B08.030.001	1SGA-WG57	OM-201-1876 ISI-OCN1-003		MT	NDE-25	CS	09.000	-----	1A SG SUPPORT SKIRT TO HEAD PC 95 TO 07

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B09.011.000	********** PIPING	CIRCUMFERENTIAL***** WELDS**********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE 4 IN. & OVER **********
B09.011.093	1-53A-2.2-63L	SYS 53A ISO 2 P2		UT	ISI-120	SS	10.00 01.000	40399	CORE FLOOD A, PIPE TO ELBOW
B09.011.093A	1-53A-2.2-63L	SYS 53A ISO 2 P2		PT	NDE-35	SS	10.00 01.000	-----	CORE FLOOD A, PIPE TO ELBOW
B09.011.098	1-53A-1.2-8L	SYS 53A ISO 1 P2		UT	ISI-120	SS	14.00 01.250	40389	10 B SIDE CORE FLOOD (Y-AXIS) VALVE TO ELBOW
B09.011.098A	1-53A-1.2-8L	SYS 53A ISO 1 P2		PT	NDE-35	SS	14.00 01.250	-----	10 B SIDE CORE FLOOD (Y-AXIS) VALVE TO ELBOW
B09.011.099	1-53A-1.2-6L	SYS 53A ISO 1 P2		UT	ISI-120	SS	14.00 01.250	40389	B SIDE CORE FLOOD (Y-AXIS) PIPE TO ELBOW
B09.011.099A	1-53A-1.2-6L	SYS 53A ISO 1 P2		PT	NDE-35	SS	14.00 01.250	-----	B SIDE CORE FLOOD (Y-AXIS) PIPE TO ELBOW
B09.011.102	1-53A-1.2-28L	SYS 53A ISO 1 P2		UT	ISI-120	SS	10.75 01.000	40399	B SIDE CORE FLOOD

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B09.011.102A	1-53A-1.2-28L	SYS 53A ISO 1 P2		PT	NDE-35	SS	10.75 01.000	-----	B SIDE CORE FLOOD
B09.011.103	1-53A-1.2-21L	SYS 53A ISO 1 P2		UT	ISI-120	SS	10.75 01.000	40399	B SIDE CORE FLOOD
B09.011.103A	1-53A-1.2-21L	SYS 53A ISO 1 P2		PT	NDE-35	SS	10.75 01.000	-----	B SIDE CORE FLOOD
B09.011.113	1-51A-05-52C	SYS 51A ISO 5		UT	ISI-120	SS	04.00 00.531	40406	1B1 HIGH PRESSURE INJECTION
B09.011.113A	1-51A-05-52C	SYS 51A ISO 5		PT	NDE-35	SS	04.00 00.531		1B1 HIGH PRESSURE INJECTION
B09.012.000	********** PIPING	LONGITUDINAL******** WELDS**********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE 4 IN. & OVER **********
B09.012.017	1PDA2-212LI	B&W 131914E6 ISI-OCN1-012		UT	ISI-182	CS	34.75 03.000	40350	A2 LONG SEAM PC 212R TO 212L SEE REQUEST FOR RELIEF ONS-003
B09.012.017A	1PDA2-212LI	OM-201-1844 ISI-OCN1-012		MT	NDE-25	CS	34.75 03.000	-----	A2 DISCHARGE INSIDE LONG SEAM PC 212R TO 212L

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B09.012.018	1PDA2-212LO	B&W 131914E6 ISI-OCN1-012		UT	ISI-182	CS	34.75 03.000	40350	A2 LONG SEAM PC 212L TO 212R SEE REQUEST FOR RELIEF ONS-003
B09.012.018A	1PDA2-212LO	OM-201-1844 ISI-OCN1-012		MT	NDE-25	CS	34.75 03.000	-----	A2 DISCHARGE OUTSIDE LONG SEAM PC 212L TO 212R
B09.021.000	********** PIPING	CIRCUMFERENTIAL***** WELDS**********		***	*******	*****	__.__ __.__	*****	NOMINAL PIPE SIZE ********** 4 IN. & SMALLER **********
B09.021.008	1-51A-11-87	SYS 51A ISO 11.3 ----------		PT	NDE-35	SS	02.50 00.375	-----	SELECTION CRITERIA 4.2.1 ----------
B09.021.009A	1-51A-11-89	SYS 51A ISO 11.3 ----------		PT	NDE-35	SS	02.50 00.375	-----	SELECTION CRITERIA 4.2.1 ----------
B09.021.051	1-51A-05-71C	SYS 51A ISO 5 PO-101B-1		PT	NDE-35	SS	02.50 00.375	-----	1B1 HIGH PRESSURE INJECTION ----------
B09.021.052	1-51A-05-65C	SYS 51A ISO 5 PO-101B-1		PT	NDE-35	SS	02.50 00.375	-----	1B1 HIGH PRESSURE INJECTION ----------
B09.021.053	1-51A-05-62C	SYS 51A ISO 5 PO-101B-1		PT	NDE-35	SS	02.50 00.375	-----	1B1 HIGH PRESSURE INJECTION ----------

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B09.021.054	1-51A-05-59C	SYS 51A ISO 5 PO-101B-1		PT	NDE-35	SS	02.50 00.375	-----	1B1 HIGH PRESSURE INJECTION
B09.021.055	1-51A-05-56C	SYS 51A ISO 5 PO-101B-1		PT	NDE-35	SS	02.50 00.375	-----	1B1 HIGH PRESSURE INJECTION
B09.021.072	1-51A-136-01A	SYS 51A ISO 136		PT	NDE-35	SS	03.00 00.438	-----	
B09.021.074	1-51A-136-03	SYS 51A ISO 136		PT	NDE-35	SS	03.00 00.438	-----	
B09.031.000	******* BRANCH PIPE	CONNECTION WELDS *** **********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE ********** 4 INCHES & OVER **********
B09.032.000	******* BRANCH PIPE	CONNECTION WELDS *** **********		***	*******	*****	__.__ __.___	*****	NOMINAL PIPE SIZE ********** LESS THAN 4 INCHES **********
B09.040.000	******* SOCKET WELDS	**********		***	*******	*****	__.__ __.___	*****	**********

DUKE POWER COMPANY
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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B10.010.002	1-53A-H1B	0-479A		PT	NDE35	SS	01.500		C.F.T.1B-SPRING 53A-0-479A-H1B D.E. STRESS CALC. OSC-1299-06

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B12.010.000	CLASS 1 PUMPS	CASING WELDS********	_____	***	*******	*****	__.__	*****	**********
		**********	_____		_____	_____	__.__		**********
			_____						_____
									_____
B12.020.000	CLASS 1 PUMP	CASINGS**********	_____	***	*******	*****	__.__	*****	**********
		**********	_____		_____	_____	__.__		**********
			_____						_____
									_____
B12.040.000	CLASS 1 VALVE	BODIES EXCEEDING****	_____	***	*******	*****	__.__	*****	INSPECT IF DISASSEMBLED
		4 INCH NPS**********	_____		_____	_____	__.__		**********
			_____						_____
									_____

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B13.010.000	REACTOR VESSEL	VESSEL INTERIOR***** **********	_____	***	*******	*****	__.__	*****	********** **********

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B14.010.000	REACTOR VESSEL	CRD HOUSING WELDS*** **********	_____	***	*******	*****	__.__	*****	INSPECT IF DISASSEMBLED **********
B14.010.002	1RPV-CRD-66WH9	B&W 128720E14 OM-201-2186	_____	PT	NDE-35	SS/IN	04.06 00.650	-----	CRDM HOUSING BODY TO ADAPTER MK-67 TO MK-55
B14.010.005	1RPV-CRD-66W60	B&W 128720E14 DPS 706599-1056	_____	PT	NDE-35	CS/SS	05.00 00.500	_____	CRDM BASE TO MOTOR TUBE
B14.010.008	1RPV-CRD-66	B&W 128720E14 DPS 706599-1056	_____	PT	NDE-35	CS/SS	04.30 00.400	_____	CRDM MOTOR TUBE TO EXTENSION
B14.010.011	1RPV-CRD-66W61	B&W 128720E14 DPS 706605-1058	_____	PT	NDE-35	SS	04.19 00.380	_____	PERIPHERAL CRDM EXTENSION TO CAP

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B15.010.000	REACTOR VESSEL	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.010.001	1RPV-LK TEST	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	RX VESSEL SYS. LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.011.000	REACTOR VESSEL	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.020.000	***PRESSURIZER	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.020.001	1PZR-LK TEST	OFD-100A-1.2		VIS	ISI-350	-----	__.__	-----	PRESS. SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.021.000	***PRESSURIZER	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.030.000	*********STEAM	GENERATORS PRESSURE* RETAINING BOUNDARY**		***	*******	*****	__.__	*****	********** **********
B15.030.001	1SGA-LK TEST	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	STEAM GEN.A SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B15.030.002	1SGB-LK TEST	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	STEAM GEN.B SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.031.000	*********STEAM	GENERATORS PRESSURE** RETAINING BOUNDARY**		***	*******	*****	__.__	*****	**********
B15.040.000	HEAT EXCHANGER	PRESSURE RETAINING BOUNDARY		—			__.__	-----	**********
B15.040.001	1LDC1A-LK TEST	OFD-101A-1.1		VIS	ISI-350	-----	__.__	-----	COOLER 1A SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.040.002	1LDC1B-LK TEST	OFD-101A-1.1		VIS	ISI-350	-----	__.__	-----	COOLER 1B SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.041.000	HEAT EXCHANGER	PRESSURE RETAINING BOUNDARY		—			__.__	-----	**********
B15.050.000	CLASS 1 PIPING	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	**********
B15.050.001	1-OFD-100A-1.1	OFD-100A-1.1		VIS	ISI-350 QCL-15	-----	__.__	-----	CLASS A SYS LEAK TEST-INCLUDES DWG.NOS.O-422BB1A,1B,2,3,5,&6

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B15.050.001A	1-OFD-100A-1.2	OFD-100A-1.2		VIS	ISI-350 QCL-15				CLASS A SYS LEAK TEST-INCLUDES DWG. NO. O-422BB-4
B15.050.002	1-OFD-101A-1.1	OFD-101A-1.1		VIS	ISI-350	-----		-----	CLASS A SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.050.003	1-OFD-101A-1.4	OFD-101A-1.4		VT2	ISI-350 QCL-15	-----		-----	CLASS A SYS LEAK TEST-INCLUDES DWG NO. O-422X-51
B15.050.004	1-OFD-102A-1.1	OFD-102A-1.1		VIS	ISI-350	-----		-----	CLASS A SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.050.005	1-OFD-102A-1.2	OFD-102A-1.2		VIS	ISI-350	-----		-----	CLASS A SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.050.006	1-OFD-102A-1.3	OFD-102A-1.3		VIS	ISI-350	-----		-----	CLASS A SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.050.007	1-OFD-110A-1.1	OFD-110A-1.1		VIS	ISI-350	-----		-----	CLASS A SYSTEM LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.050.009	1-OFD-110A-1.4	OFD-110A-1.4		VIS	ISI-350				CL. A SYSTEM LEAKAGE TEST ALT EXAM QCL-15 VT2 MAY BE USED

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B15.060.000	*CLASS 1 PUMPS	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.060.001	1-RCP-1A1	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	RCP 1A1 SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.060.002	1-RCP-1A2	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	RCP 1A2 SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.060.003	1-RCP-1B1	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	RCP 1B1 SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.060.004	1-RCP-1B2	OFD-100A-1.1		VIS	ISI-350	-----	__.__	-----	RCP 1B2 SYS LEAK TEST ALT. EXAM QCL-15 VT2 MAY BE USED
B15.061.000	*CLASS 1 PUMPS	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	********** **********
B15.070.000	CLASS 1 VALVES	PRESSURE RETAINING** BOUNDARY**********		***	*******	*****	__.__	*****	COVERED IN B15.050.000 **********

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
B16.011.000	**** STEAM GEMERATOR	TUBING **********		***	******* *******		__.__ __.__		***** STRIGHT TUBE DESIGN **** **********
B16.011.001	1SGA-TUBES	B&W 129309E7		ET	ISI-418	INCO	00.62 00.040	*****	* SELECT CAL. STANDARD PER VOL.1, SECT. 10.2
B16.011.002	1SGB-TUBES	B&W 129309E7		ET	ISI-418	INCO	00.62 00.040	*****	* SELECT CAL. STANDARD PER VOL.1, SECT. 10.2

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C01.010.000	*********SHELL	CIRCUMFERENTIAL***** WELDS**********		***	*******	*****	__.__	*****	***** PRESSURE VESSELS ******* **********
C01.010.005	ISGB-WG8-1	OM-201-1873 ISI-OCN1-004		UT	ISI-130	CS	__.__ 04.188	40339	GEN B SHELL TO SHELL PC 1 TO 2
C01.020.000	**********HEAD	CIRCUMFERENTIAL***** WELDS**********		***	*******	*****	__.__	*****	******* PRESSURE VESSELS ***** **********
C01.030.000	*******CLASS 2	TUBESHEET TO SHELL WELDS**********		***	*******	*****	__.__	*****	***** PRESSURE VESSELS ******* **********

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C02.010.000	********** NOZZLES	IN VESSELS ********* **********	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	1/2" NOMINAL THICKNESS AND**** LESS**********
C02.021.000	********NOZZLE	TO SHELL OR HEAD**** WELDS**********	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	********** **********
C02.022.000	********NOZZLE	INSIDE RADIUS******* SECTION**********	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	********** **********

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C03.010.000	********** PRESSURE	VESSELS INTEGRALLY** WELDED ATTACHMENTS**		***	*******	*****	__.__	*****	********** **********
C03.040.000	*** CLASS 2 PIPING	INTEGRALLY WELDED ** ATTACHMENTS ********		***	*******		__.__		********** **********
C03.040.017	1-01A-H9B	0-480A		MT	NDE-25	CS	01.750		M.S.-SPRING 1-01A-0-480A-H9B D.E. STRESS CALC. OSC-1296-06
C03.040.018	1-01A-H9A	0-480A		MT	NDE-25	CS	01.750		M.S.-SPRING 1-01A-0-480A-H9A D.E. STRESS CALC. OSC-1296-06
C03.040.037	1-03-H15B	0-481A		MT	NDE-25	CS	01.500		M. FDWTR-SPRING 03-0-481A-H15B D.E. STRESS CALC. OSC-1297-06
C03.040.038	1-03-H9B	0-480A		VT3	QCL-14	CS	01.000		MAIN FDWTR-RIGID 03-0-480A-H9B REQUEST FOR RELIEF ONS-013 REQUEST FOR RELIEF ONS-0013
C03.040.050	1-53B-H17	0-436D		PT	NDE-35	SS	01.250		LPI-SPRING 1-53B-5-0-436D-H17
C03.040.053	1-53B-R29	0-439B		PT	NDE-35	SS	01.000	-----	LPI - RIGID 1-53B-5-0-439B-R29

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C03.040.059	1-53B-DE062	0-435B		PT	NDE-35	SS	01.000	-----	LPI - RESTRAINT 1-53B-0-435B-DE062
C03.040.062	1-54A-H5	0-439C		PT	NDE-35	SS	01.000	-----	REACTOR BLDG. SPRAY - RIGID 1-54A-3-0-439C-H5
C03.040.065	1-54A-R6	0-436D		PT	NDE-35	SS	00.750	----	R.B. SPRAY - RIGID 1-54A-3-0-436D-R6

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C04.040.000	******** PRESSURE	RETAINING BOLTING ** **********	***** ***** *****	***	******* *******	***** _____	__.__ __.__	_____	**** VALVE BOLTING > 2" **** **********
C04.040.001	1-01A-SV1-STUD	SYS. 01A ISO. 1.5 OM-200-195	_____ _____ _____	UT	NDE-44 _____	CS _____	02.25 __.__	40417	MAIN STEAM STOP VALVE SV1 REQUEST FOR RELIEF ONS-009

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C05.011.000	*** CLASS 2 PIPING	CIRCUMFERENTIAL WELD **********		***	*******	*****	__.__ __.__	*****	NOMINAL WALL THICKNESS ******* 1/2 IN. OR LESS **********
C05.011.027	1-53B-3.1-42E	SYS 53B ISO 3.1		PT	NDE-35	SS	06.00 00.134	-----	
C05.011.034	1-53B-16-4	SYS 53B ISO 16		PT	NDE-35	SS	08.00 00.148	-----	
C05.011.035	1-53B-7.2-20KA	SYS 53B ISO 7.2		PT	NDE-35	SS	10.00 00.165	-----	TERMINAL END
C05.011.036	1-53B-7.2-11K	SYS 53B ISO 7.2		PT	NDE-35	SS	10.00 00.165	-----	
C05.011.038	1-53B-7.1-30A	SYS 53B ISO 7.1		PT	NDE-35	SS	06.00 00.134	-----	
C05.011.039	1-53B-7.1-26	SYS 53B ISO 7.1		PT	NDE-35	SS	06.00 00.134	-----	
C05.011.044	1-53B-3.4-32F	SYS 53B ISO 3.4		PT	NDE-35	SS	10.00 00.250	-----	

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C05.011.085B	1-53B-14-1C	SYS 53B ISO 14		PT	NDE-35	SS	12.00 00.180	-----	SELECTION CRITERIA 5.2
C05.011.086	1-53B-14-1D	SYS 53B ISO 14		PT	NDE-35	SS	08.00 00.250	-----	SELECTION CRITERIA 5.2
C05.011.087	1-53B-14-1E	SYS 53B ISO 14		PT	NDE-35	SS	12.00 00.250	-----	SELECTION CRITERIA 5.2
C05.011.093	1-53B-10-B64	SYS 53B ISO 10		PT	NDE-35	SS	12.00 00.180	-----	
C05.011.151	1-53A-2.4-78LA	SYS 53A ISO 2.4		PT	NDE-35	CS/SS	14.00 00.375	-----	TERMINAL END
C05.011.205	1-54A-1.3-15A	SYS 54A ISO 1.3		PT	NDE-35	SS	08.00 00.250	-----	TERMINAL END
C05.011.206	1-54A-3.1-2C	SYS 54A ISO 3.1		PT	NDE-35	SS	08.00 00.250	-----	
C05.011.207	1-54A-3.1-6CC	SYS 54A ISO 3.1		PT	NDE-35	SS	08.00 00.250	-----	

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C05.011.220	1-54A-1.1-19A	SYS 54A ISO 1.1		PT	NDE-35	SS	10.00 00.250	-----	
C05.011.264	1-51A-1.1-39A	SYS 51A ISO 1.1		PT	NDE-35	SS	06.00 00.280	-----	
C05.011.268	1-51A-1.2-43A	SYS 51A ISO 1.2		PT	NDE-35	SS	06.00 00.280	-----	
C05.011.271	1-51A-1.2-48A	SYS 51A ISO 1.2		PT	NDE-35	SS	06.00 00.280	-----	
C05.012.000	***** CLASS 2 PIPING	LONGITUDINAL WELDS * **********		***	*******	*****	__.__ __.___	*****	NOMINAL WALL THICKNESS ******* 1/2 IN. OR LESS **********
C05.012.021	1-54A-3.1-2CL	SYS 54A ISO 3.1		PT	NDE-35	SS	08.00 00.250	-----	LONG. SEAM FOR C05.011.206
C05.012.026	1-53B-10-B77L	SYS 53B ISO 10		PT	NDE35	SS	12.00 00.180		ELL SEAM FOR C05.011.110,INSP ENTIRE LENGTH, SELECT.CRIT.5.2
C05.021.000	***** CLASS 2 PIPING	CIRCUMFERENTIAL***** WELDS**********		***	*******	*****	__.__ __.___	*****	GREATER THAN 1/2 IN. ********* NOMINAL WALL THICKNESS *******

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C05.022.000	***** CLASS 2 PIPING	LONGITUDINAL WELDS * **********		***	******* *******		__.__ __.__		GREATER THAN 1/2 IN. ********* NOMINAL WALL THICKNESS *******
C05.031.000	CLASS 2 PIPING	BRANCH CONNECTION WELDS**********		***	******* *******	*****	__.__ __.__	*****	********** **********
C05.031.008	1-53B-6.2-26KC	SYS 53B ISO 6.2		PT	NDE-35	SS	06.00 00.134	-----	SELECTION CRITERIA 5.2

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
C07.010.000	********** PRESSURE	VESSELS**********		***	*******	*****	__.__	*****	PRESSURE RETAINING COMPONENTS*
C07.020.000	********PIPING	**********		***	*******	*****	__.__	*****	PRESSURE RETAINING COMPONENTS*
C07.020.006	1-OFD-101A-1.4	OFD-101A-1.4		VT2	QCL-15 ISI-350		__.__		CLASS B HPI SYSTEM FUNCTIONAL TEST ALSO INSP. 110187 STATUS - CLR
C07.020.007	1-OFD-101A-1.3	OFD-101A-1.3		VT2	QCL-15 ISI-350		__.__		CLASS B HPI SYSTEM FUNCTIONAL TEST ALSO INSP. 110187 STATUS - CLR
C07.030.000	*********PUMPS	**********		***	*******	*****	__.__	*****	PRESSURE RETAINING COMPONENTS* SYSTEM PRESSURE TEST**********
C07.030.004	1HPI-PUMP-1C	OFD-101A-1.3		VT2	QCL-15 ISI-350	-----	__.__	-----	HPI PUMP 1C FUNCTIONAL TEST ALSO INSP. 110187 STATUS - CLR
C07.040.000	********VALVES	**********		***	*******	*****	__.__	*****	PRESSURE RETAINING COMPONENTS COVERED IN C07.020.000 SAME AS C07.020.000 SAME AS C07.020.000

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D01.011.000	********SYSTEM	INSERVICE TEST****** **********		***	*******	*****	__.__ __.___	*****	********** **********
D01.011.015	1-OFD-135A-1.2	OFD-135A-1.2		VT2	ISI-350 QCL-15		__.__ __.___		CL. C SYSTEM LEAK TEST

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D02.011.000	********SYSTEM	FUNCTIONAL********** TEST**********		***	*******	*****	__.__	*****	********** **********
D02.011.003	1-OFD-121A-1.7	OFD-121A-1.7		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.004	1-OFD-121A-1.8	OFD-121A-1.8		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.005	1-OFD-121B-1.3	OFD-121B-1.3		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.006	1-OFD-121B-1.5	OFD-121B-1.5		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.021	1-OFD-133A-2.5	OFD-133A-2.5		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.023	1-OFD-133A-1.2	OFD-133A-1.2		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.025	1-OFD-133A-1.5	OFD-133A-1.5		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D02.011.026	1-OFD-133A-2.1	OFD-133A-2.1		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.027	1-OFD-133A-2.2	OFD-133A-2.2		VT2	ISI-350 QCL-15		__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.028	1-OFD-133A-3.2	OFD-133A-3.2		VT2	ISI-350 QCL-15		__.__		CL. C SYSTEM LEAK TEST
D02.011.029	1-OFD-133A-3.4	OFD-133A-3.4		VT2	ISI-350 QCL-15		__.__		CL. C SYSTEM LEAK TEST
D02.011.032	1-OFD-124A-1.3	OFD-124A-1.3		VT2	ISI-350 QCL-15	--	__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.034	1-OFD-124B-1.1	OFD-124B-1.1		VT2	ISI-350 QCL-15	--	__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.035	1-OFD-124B-2.1	OFD-124B-2.1		VT2	ISI-350 QCL-15	--	__.__	-----	CL. C SYSTEM LEAK TEST
D02.011.041	1-OFD-121C-1.1	OFD-121C-1.1		VT2	ISI-350 QCL-15		__.__		CL. C SYSTEM LEAK TEST

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D02.011.042	1-OFD-124C-1.2	OFD-124C-1.2		VT2	QCL-15 ISI-350		__.__		CL. C SYSTEM LEAK TEST
D02.011.043	1-OFD-133A-3.1	OFD-133A-3.1		VT2	QCL-15 ISI-350		__.__		CL. C SYSTEM LEAK TEST
D02.020.000	***** CLASS 3 PIPING	INTEGRAL ATTACHMENT WELDS **********		***	*******	*****	__.__	*****	COMPONENT SUPPORTS ********** AND RESTRAINTS **********
D02.020.020	1-03A-SR39	O-439A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-O-439A-SR39
D02.020.021	1-03A-H24	O-439A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-O-439A-H24
D02.020.032	1-03A-SR75	O-401A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-O-401A-SR75
D02.020.034	1-03A-H47	O-400A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-O-400A-H47
D02.020.035	1-03A-SR79	O-400A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-O-400A-SR79

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D02.020.036	1-03A-H48	0-400A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-H48
D02.020.037	1-03A-SR80	0-400A		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-SR80
D02.020.062	1-03A-SR87	0-400B		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-0-400B-SR87
D02.020.077	1-03A-H11	0-439C		VT3	QCL-14	-----	__.__	-----	EMER. FDWTR - RIGID 1-03A-1-0-439C-H11
D02.020.082	1-03A-SR47	0-439B		VT3	QCL-14		__.__		EMER. FDWTR-RIGID 1-03A-1-0-439B-SR47
D02.020.087	1-03A-H72(A)	0-439A		VT3	QCL-14		__.__		EMER. FDWTR. - SPRING 1-03A-1-0-439A-H72
D02.020.096	1-03A-SR86	0-400B		VT3	QCL-14		__.__		EMER. FDWTR-RIGID 1-03A-1-0-400B-SR86
D02.020.101	1-03A-H46	0-400A		VT3	QCL-14		__.__		EMER. FDWTR - SPRING 1-03A-1-0-400A-H46

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D02.020.102	1-03A-H12	0-439C		VT3	QCL-14		__.__		EMER. FDWTR. - RIGID 1-03A-1-0-439C-H12
D02.020.107	1-03A-SR17	0-401A		VT3	QCL-14		__.__		EMER. FDWTR. - RIGID 1-03A-1-0-401A-SR17
D02.020.135	1-03A-SR18	0-401A		VT3	QCL-14		__.__		EMER. FDWTR - RIGID 1-03A-1-0-401A-SR18
D02.030.000	******INTEGRAL	ATTACHMENT**********		***	*******	*****	__.__	*****	MECHANICAL&HYDRAULIC SNUBBERS
D02.030.001	1-01A-R6	0-403C		VT3	QCL-14	-----	__.__	-----	STEAM SUPPLY - SNUBBER 1-01A-4-1-0-403C-R6
D02.040.000	******INTEGRAL	ATTACHMENT**********		***	*******	*****	__.__	*****	SPRING TYPE SUPPORTS**********
D02.060.000	******INTEGRAL	ATTACHMENT**********		***	*******	*****	__.__	*****	SHOCK ABSORBERS**********

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
D03.011.000	********SYSTEM	INSERVICE TEST****** **********	_____ _____ _____	***	******* _____	***** _____	__.__ __.__	*****	********** ********** _____ _____
D03.011.001	1-OFD-104A-1.1	OFD-104A-1.1 ----------	_____ _____ _____	VT2	ISI-350 QCL-15	_____ _____	__.__ __.__	-----	CL. C SYSTEM LEAK TEST _____ _____ _____

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
E01.001.000	REACTOR COOL. PUMP	FLYWHEEL INSPECTION **********		***	*******	*****	__.__ __.__	*****	********** **********
E01.001.004	1RCP-1B2	OM-201D-38		UT	ISI-117	CS	72.00 09.500	-----	RC PUMP 1B2 FLYWHEEL BASELINE RFO # 12
E01.001.004A	1RCP-1B2	OM-201D-38		MT	NDE-25	CS	72.00 09.500	-----	RC PUMP 1B2 FLYWHEEL MT INSP. WHEN FLYWHEEL REMOVED BASELINE RFO # 12

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
E04.001.000	**HPI SAFE END	EXAMINATIONS******** **********	_____ _____ _____	***	******* _____	***** _____	__.__ __.___	*****	********** ********** _____ _____

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.01.000	********** CLASS 1	SUPPORTS********** **********		***	*******	*****	__.__	*****	********** **********
F1.01.069	1-51A-H8C	0-478A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51-0-478A-H8C INSP.RFO#12 PER IWF-2430(A)
F1.01.074	1-51A-H5C	0-478A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-478A-H5C INSP.RFO#12 PER IWF-2430(A)
F1.01.076	1-51A-H7C	0-478A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-478A-H7C INSP.RFO#12 PER IWF-2430(A)
F1.01.078	1-51A-H2A	0-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-479A-H2A INSP.RFO#12 PER IWF-2430(A)
F1.01.079	1-51A-H3A	0-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-479A-H3A
F1.01.080	1-51A-H4A	0-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-479A-H4A
F1.01.081	1-51A-H5A	0-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-0-479A-H5A

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.01.082	1-51A-H6A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H6A
F1.01.083	1-51A-H7A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H7A INSP.RFO#14 PER IWF-2420(B) PIR# 1-090-0046
F1.01.084	1-51A-H8A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H8A INSP.RFO#12 PER IWF-2430(A)
F1.01.085	1-51A-H9A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H9A INSP.RFO#12 PER IWF-2430(A)
F1.01.087	1-51A-H12A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H12A
F1.01.088	1-51A-H13A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H13A
F1.01.091	1-51A-H16A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H16A INSP.RFO#12 PER IWF-2430(A)
F1.01.092	1-51A-H10A	O-479A		VT	QCL-14		02.50		HIGH PRESS INJ. - RIGID 51A-O-479A-H10A INSP.RFO#12 PER IWF-2430(A)

DUKE POWER COMPANY
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PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.01.150	1-53A-H8A	0-478A		VT	QCL-14	-----	14.00	-----	LOW PRESS INJ. - SPRING 53A-0-478A-H8A
F1.01.164	1-53A-H35C	0-481A		VT	QCL-14		01.50		LOW PRESS INJ. - RIGID 53A-0-481A-H35C
F1.01.165	1-53A-H36C	0-481A		VT	QCL-14		01.50		LOW PRESS INJ. - RIGID 53A-0-481A-H36C
F1.01.166	1-53A-H37C	0-481A		VT	QCL-14		01.50		LOW PRESS INJ. - RIGID 53A-0-481A-H37C
F1.01.171	1-53A-H4A	0-478A		VT	QCL-14		10.00		LOW PRESS INJ. -RIGID 53A-0-478A-H4A
F1.02.000	********** CLASS 2	SUPPORTS********** **********		***	*******	*****		*****	********** **********
F1.02.017	1-01A-DE006	0-550		VT	QCL-14		36.00	-----	MAIN STEAM A - SNUBBER 1-01A-0-550-DE006 (N.R.REQ.)
F1.02.018	1-01A-R2	0-550		VT	QCL-14		36.50	-----	MAIN STEAM A - HYD SNUBBER 1-01A-0-550-R2

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.02.037	1-01A-H2B	0-481A		VT	QCL-14	-----	26.18	-----	MAIN STEAM B - RIGID 01A-0-481A-H2B
F1.02.070	1-01A-H22(A)	0-401A		VT	QCL-14	-----	12.00	-----	MAIN STEAM B - SPRING 1-01A-401A-EM0-H22
F1.02.117	1-03-H62	0-439B		VT	QCL-14	-----	24.00	-----	MAIN FDWTR A-RIGID 1-03-0-439B-H62
F1.02.136	1-03-H5B	0-479A		VT	QCL-14		24.00		MAIN FDWTR B - RIGID 03-0-479A-H5B
F1.02.140	1-03-H9B	0-480A		VT	QCL-14	-----	24.00	-----	MAIN FDWTR B - RIGID 03-0-480A-H9B
F1.02.142	1-03-H5A	0-480A		VT	QCL-14		20.00 04.000		MAIN FDWTR A-RIGID 03-0-480A-H5A
F1.02.209	1-03A-H71	0-437A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR B - SPRING 1-03A-1-0-437A-H71
F1.02.251	1-51A-DE064	0-435C		VT	QCL-14	-----	06.00	-----	HPI - SWAY STRUT 1-51A-0-435C-DE064

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.02.285	1-53B-DE050	0-438B		VT	QCL-14	-----	12.00	-----	DECAY HEAT - RIGID 1-53B-0-438B-DE050
F1.02.286	1-53B-H25	0-437B		VT	QCL-14	-----	12.00	-----	DECAY HEAT - RIGID 1-53B-3-0-437B-H25
F1.02.287	1-53B-0279	0-437B		VT	QCL-14	-----	12.00	-----	DECAY HEAT - SWAY STRUT 1-53B-0-437B-ARM-0279
F1.02.288	1-53B-DE052	0-437B		VT	QCL-14	-----	12.00	-----	DECAY HEAT - SWAY STRUT 1-53B-0-437B-DE052
F1.02.291	1-53B-R3	0-444		VT	QCL-14	-----	12.00	-----	DECAY HEAT - ANCHOR 1-53B-3-0-444-R3
F1.02.305	1-53A-DE078	0-436D		VT	QCL-14	-----	10.00	-----	DECAY HEAT - RIGID 1-53A-436D-DE078
F1.02.306	1-53B-R2401	0-436D		VT	QCL-14	____	10.00	____	DECAY HEAT-RIGID 1-53B-0-436D-DJB-R2401
F1.02.307	1-53B-H23	0-436D		VT	QCL-14	-----	10.00	-----	DECAY HEAT - SPRING 1-53B-5-0-436D-H23

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.02.308	1-53B-R5	0-436B		VT	QCL-14	-----	10.00	-----	DECAY HEAT - SWAY STRUT 1-53B-5-0-436B-R5
F1.02.343	1-53B-2601	0-439B		VT	QCL-14	-----	10.00	-----	DECAY HEAT - RIGID 1-53B-439B-RTB-2601
F1.02.344	1-53B-2602	0-439B		VT	QCL-14	-----	10.00	-----	DECAY HEAT - RIGID 1-53B-439B-RTB-2602
F1.02.345	1-53B-R29	0-439B		VT	QCL-14	-----	10.00	-----	DECAY HEAT - RIGID 1-53B-5-0-439B-R29
F1.02.346	1-53B-H57	0-439B		VT	QCL-14	-----	10.00	-----	DECAY HEAT - SPRING 1-53B-5-0-439B-H57
F1.02.347	1-53B-H58A	0-439A		VT	QCL-14	-----	10.00	-----	DECAY HEAT - SPRING 1-53B-0-439A-H58A
F1.02.348	1-53B-H17	0-436D		VT	QCL-14	-----	10.00	-----	DECAY HEAT - SPRING 1-53B-5-0-436D-H17
F1.02.392	1-53B-H3	0-436E		VT	QCL-14	-----	14.00	-----	DECAY HEAT - RIGID 1-53B-2-0-436E-H3 INSP.RFO#10 PER IWF-2430(A)

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.02.393	1-53B-H1	0-436E		VT	QCL-14	-----	14.00	-----	DECAY HEAT - RIGID 1-53B-2-0-436E-H1
F1.02.394	1-53B-DE068	0-435B		VT	QCL-14	-----	08.00	-----	DECAY HEAT - RIGID 1-53B-0-435B-DE068 INSP.RFO#10 PER IWF-2430(A)
F1.02.396	1-53B-DE069	0-435B		VT	QCL-14	-----	08.00	-----	DECAY HEAT - RIGID 1-53B-0-435B-DE069 INSP.RFO#10 PER IWF-2430(A)
F1.02.404	1-53B-H12	0-435B		VT	QCL-14	-----	14.00	-----	DECAY HEAT - SPRING 1-53B-4-0-435B-H12 INSP.RFO#10 PER IWF-2430(A)
F1.02.405	1-53A-H3B	0-478A		VT	QCL-14		14.00		CORE FLOOD-RIGID 53A-0-478A-H3B
F1.02.406	1-53A-H5A	0-479A		VT	QCL-14		12.00		DECAY HEAT-SNUBBER 53A-0-479A-H5A
F1.02.453	1-54A-H35	0-435B		VT	QCL-14	-----	10.00	-----	REACTOR BLDG. SPRAY-RIGID 1-54A-1-0-435B-H35
F1.02.460	1-54A-DE014	0-435B		VT	QCL-14	-----	08.00	-----	REACTOR BLDG. SPRAY - RIGID 1-54A-0-435B-DE014

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.02.461	1-54A-DE015	0-435B		VT	QCL-14	-----	08.00	-----	REACT. BLDG. SPRAY-MECH. SNUBB 1-54A-0-435B-DE015
F1.02.463	1-54A-DE016	0-435B		VT	QCL-14	-----	08.00	-----	REACTOR BLDG. SPRAY-SWAY STRUT 1-54A-0-435B-DE016
F1.02.472	1-54A-R6	0-436D		VT	QCL-14	-----	08.00	-----	REACTOR BUILDING SPRAY-RIGID 1-54A-3-0-436D-R6
F1.02.475	1-54A-R19	9-439A		VT	QCL-14	-----	08.00	-----	REACTOR BUILDING SPRAY-ANCHOR 1-54A-0-439A-R19
F1.02.500	1-54A-R21	0-439A		VT	QCL-14	-----	08.00	-----	R.B. SPRAY - RIGID 1-54A-0-439A-R21
F1.02.502	1-54A-R22	0-444		VT	QCL-14	-----	08.00	-----	REACTOR BLDG. SPRAY - ANCHOR 1-54A-3-0-444-R22
F1.02.503	1-54A-H5	0-439C		VT	QCL-14	-----	08.00	-----	REACTOR BLDG. SPRAY - RIGID 1-54A-3-0-439C-H5
F1.03.000	********** CLASS 3	SUPPORTS ********** **********		***	*******				********** **********

DUKE POWER COMPANY
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PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION LISTING OUTAGE 12

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.001	1-01A-H1	0-401A		VT	QCL-14	-----	06.00	-----	STEAM SUPPLY - SPRING 1-01A-4-1-0-401A-H1
F1.03.002	1-01A-H2	0-401A		VT	QCL-14	-----	06.00	-----	STEAM SUPPLY - SPRING 1-01A-4-1-0-401A-H2
F1.03.003	1-01A-R6	0-403C		VT	QCL-14	-----	06.00	-----	STEAM SUPPLY - MECH. SNUBBER 1-01A-4-1-0-403C-R6
F1.03.058	1-03-H54	0-439B		VT	QCL-14	-----	24.00	-----	MAIN FDWTR - RIGID 1-03-0-439B-H54
F1.03.064	1-03-H60	0-551		VT	QCL-14	-----	24.00	-----	MAIN FDWTR - RIGID 1-03-0-551-H60
F1.03.118	1-03A-SR47	0-439B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - RIGID 1-03A-1-0-439B-SR47
F1.03.120	1-03A-SR39	0-439A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SWAY STRUT 1-03A-1-0-439A-SR39
F1.03.121	1-03A-H24	0-439A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - RIGID 1-03A-1-0-439A-H24

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.122	1-03A-H25	0-439A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - RIGID 1-03A-1-0-439A-H25
F1.03.150	1-03A-H72 (A)	0-439A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SPRING 1-03A-1-0-439A-H72
F1.03.151	1-03A-H70	0-439A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SWAY STRUT 1-03A-1-0-437A-H70
F1.03.152	1-03A-SR62	0-437A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - H.S.S SUPP. 1-03A-1-0-437A-SR62
F1.03.175	1-03A-H78	0-439B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SPRING 1-03A-1-0-439B-H78
F1.03.176	1-03A-SR64	0-439B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - H.S.S SUPP. 1-03A-1-0-439B-SR64
F1.03.207	1-03A-SR86	0-400B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - RIGID 1-03A-1-0-400B-SR86
F1.03.231	1-03A-SR75	0-401A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-401A-SR75

ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.237	1-03A-H46	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SPRING 1-03A-1-0-400A-H46
F1.03.238	1-03A-SR52	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - HYD. S.S. SUPP. 1-03A-1-0-400A-SR52
F1.03.239	1-03A-H47	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-H47
F1.03.240	1-03A-SR79	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-SR79
F1.03.241	1-03A-H48	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-H48
F1.03.242	1-03A-SR80	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-SR80
F1.03.314	1-03A-DE031	0-401A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-401A-DE031
F1.03.323	1-03A-SR17	0-401A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-401A-SR17

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.324	1-03A-SR18	0-401A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - RIGID 1-03A-1-0-401A-SR18
F1.03.358	1-03A-SR87	0-400B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400B-SR87
F1.03.367	1-03A-H144	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-H144
F1.03.371	1-03A-H149	0-400B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400B-H149
F1.03.372	1-03A-H131	0-400B		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SWAY STRUT 1-03A-1-0-400B-H131
F1.03.388	1-03A-H189	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-H189
F1.03.389	1-03A-H188	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SWAY STRUT 1-03A-1-0-400A-H188
F1.03.390	1-03A-SR36	0-400A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-400A-SR36

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.391	1-03A-H5231	0-439G		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SWAY STRUT 1-03A-439G-H5231
F1.03.392	1-03A-H4	0-439C		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SWAY STRUT 1-03A-1-0-439C-H4
F1.03.393	1-03A-H5230	0-439G		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SWAY STRUT 1-03A-439G-H5230
F1.03.394	1-03A-H5229	0-439G		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - SPRING 1-03A-439G-H5229
F1.03.405	1-03A-H11	0-439C		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-439C-H11
F1.03.406	1-03A-H12	0-439C		VT	QCL-14	-----	06.00	-----	EMER. FDWTR - RIGID 1-03A-1-0-439C-H12
F1.03.418	1-03A-H2B	0-480A		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SPRING 1-03A-480A-H2B
F1.03.419	1-03-H6068	0-479F		VT	QCL-14	-----	06.00	-----	EMER. FDWTR. - SNUBBER 1-03-479F-H6068

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ITEM NUMBER	ID. NUMBER	DRAWING NUMBERS	LOCS.	INSP REQ.	PROC. NUMBERS	MATERIAL TYPE/GRADE	DIAM./ THICK	CALIB BLOCK	COMMENTS
F1.03.420	1-03A-DE003	0-401A		VT	QCL-14		06.00		MAIN FDWTR. - RIGID 1-03A-401A-DE003
F1.03.450	1-07A-H8	0-402A		VT	QCL-14	-----	08.00	-----	LP & HP CONDENSATE - SPRING 1-07A-6-0-402A-H8

4.0 Results Of Inspections Performed During Outage 12

The results of each inspection shown in the final ISI Plan (Section 3 of this report) are included in this section. The completion date and status for each inspection are shown. All inspections revealing reportable indications are described in further detail in Section 5, 6, or 7 as applicable.

The information shown below is a field description for the reporting format included in this section of the report:

Item Number = ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500-1 (Class 2), IWD-2500-1 (Class 3), Augmented and Alternate Requirements

ID Number = Unique Identification Number

Inspection Date = Date of Examination

Inspection Status
- CLR = Clear
- REC = Recordable
- REP = Reportable

Inspection Limited
- L = Limited
- - = No

Geo. Ref. = Geometric Reflector
- N = No
- Y = Yes

Comments = General and/or Detail Description

PROGRAM: NISIRUND-QAISI04
FILE: C007133
PLANT: OCONEE UNIT 1
KEY: ITEM NUMBER B01

DUKE POWER COMPANY
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PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

DATE 08/07/90

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B01.021.001B	1RPV-WH5	05/10/90	CLR	L	N	
B01.040.001B	1RPV-WH7	05/10/90	CLR	L	N	
B01.040.002B	1RPV-WH7	05/08/90	CLR	_	N	

DUKE POWER COMPANY
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OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B02.040.003	1SGB-WG58-1	05/06/90	REP	L	N	PIR# 1-090-0052
B02.040.004	1SGB-WG58-2	05/18/90	CLR	L	Y	
B02.051.002	1-LDCA-OUT-V6	05/04/90	CLR	L	N	

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OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B03.150.002	1-LDCA-OUT-V2	05/04/90	CLR	L	Y	
B03.160.002	1-LDCA-OUT-V2	05/04/90	CLR	L	N	

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OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B05.050.003	1PIA2-7	05/05/90	CLR	_	N	
B05.050.003A	1PIA2-7	05/15/90	CLR	_	N	
B05.050.003B	1PIA2-7	05/16/90	CLR	_	N	
B05.050.004	1PDA2-2	05/05/90	CLR	L	N	
B05.050.004A	1PDA2-2	05/15/90	CLR	L	N	
B05.050.004B	1PDA2-2	05/07/90	CLR	_	N	
B05.050.012	1PHA-17	05/18/90	CLR	L	N	
B05.050.012A	1PHA-17	05/18/90	CLR	_	N	
B05.050.012B	1PHA-17	05/22/90	CLR	_	N	

DUKE POWER COMPANY
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PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B06.180.002	1RCP-1A2-F	05/05/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B07.060.002	1RCP-1A2-S	05/18/90	CLR	_	N	
B07.070.017	1-53A-LP104	05/21/90	CLR	_	N	
B07.070.018	1-53A-LP103	05/18/90	CLR	_	N	

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B08.020.005	1PZR-WP82-Z	05/07/90	CLR	_	N	
B08.020.006	1PZR-WP82-ZW	05/07/90	CLR	_	N	
B08.030.001	1SGA-WG57	05/10/90	CLR	_	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B09.011.093	1-53A-2.2-63L	05/14/90	CLR	L	Y	
B09.011.093A	1-53A-2.2-63L	05/07/90	CLR	_	N	
B09.011.098	1-53A-1.2-8L	05/14/90	CLR	L	Y	
B09.011.098A	1-53A-1.2-8L	05/08/90	CLR	_	N	
B09.011.099	1-53A-1.2-6L	05/14/90	CLR	_	Y	
B09.011.099A	1-53A-1.2-6L	05/03/90	CLR	_	N	
B09.011.102	1-53A-1.2-28L	05/14/90	CLR	_	Y	
B09.011.102A	1-53A-1.2-28L	05/08/90	CLR	_	N	
B09.011.103	1-53A-1.2-21L	05/14/90	CLR	_	Y	
B09.011.103A	1-53A-1.2-21L	05/08/90	CLR	_	N	
B09.011.113	1-51A-05-52C	05/03/90	CLR	_	N	
B09.011.113A	1-51A-05-52C	05/02/90	CLR	_	N	
B09.012.017	1PDA2-212LI	05/05/90	CLR	_	N	
B09.012.017A	1PDA2-212LI	05/04/90	CLR	_	N	
B09.012.018	1PDA2-212LO	05/05/90	CLR	_	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B09.012.018A	1PDA2-212LO	05/04/90	CLR	_	N	
B09.021.008	1-51A-11-87	05/03/90	CLR	_	N	
B09.021.009A	1-51A-11-89	05/03/90	CLR	_	N	
B09.021.051	1-51A-05-71C	05/02/90	CLR	_	N	
B09.021.052	1-51A-05-65C	05/04/90	CLR	_	N	
B09.021.053	1-51A-05-62C	05/04/90	CLR	_	N	
B09.021.054	1-51A-05-59C	05/04/90	CLR	_	N	
B09.021.055	1-51A-05-56C	05/02/90	CLR	_	N	
B09.021.072	1-51A-136-01A	05/04/90	CLR	_	N	
B09.021.074	1-51A-136-03	05/04/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B10.010.002	1-53A-H1B	05/11/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B14.010.002	1RPV-CRD-66WH9	05/08/90	CLR	_	N	
B14.010.005	1RPV-CRD-66W60	05/08/90	CLR	_	N	
B14.010.008	1RPV-CRD-66	05/08/90	CLR	_	N	
B14.010.011	1RPV-CRD-66W61	05/08/90	CLR	_	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B15.010.001	1RPV-LK TEST	06/04/90	CLR	_	N	
B15.020.001	1PZR-LK TEST	06/04/90	CLR	_	N	
B15.030.001	1SGA-LK TEST	06/04/90	CLR	_	N	
B15.030.002	1SGB-LK TEST	06/04/90	CLR	_	N	
B15.040.001	1LDC1A-LK TEST	06/04/90	CLR	_	N	
B15.040.002	1LDC1B-LK TEST	06/04/90	CLR	_	N	
B15.050.001	1-OFD-100A-1.1	06/04/90	CLR	_	N	
B15.050.001A	1-OFD-100A-1.2	06/04/90	CLR	_	N	
B15.050.002	1-OFD-101A-1.1	06/04/90	REC	_	N	
B15.050.003	1-OFD-101A-1.4	06/04/90	CLR	_	N	
B15.050.004	1-OFD-102A-1.1	06/04/90	REC	_	N	
B15.050.005	1-OFD-102A-1.2	06/04/90	CLR	_	N	
B15.050.006	1-OFD-102A-1.3	06/04/90	CLR	_	N	
B15.050.007	1-OFD-110A-1.1	06/04/90	REC	_	N	
B15.050.009	1-OFD-110A-1.4	06/04/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B15.060.001	1-RCP-1A1	06/04/90	CLR	_	N	
B15.060.002	1-RCP-1A2	06/04/90	CLR	_	N	
B15.060.003	1-RCP-1B1	06/04/90	CLR	_	N	
B15.060.004	1-RCP-1B2	06/04/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
B16.011.001	1SGA-TUBES	05/17/90	REP	_	N	
B16.011.002	1SGB-TUBES	05/18/90	REP	_	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C01.010.005	1SGB-WG8-1	05/09/90	CLR	L	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C03.040.017	1-01A-H9B	05/21/90	CLR	_	N	
C03.040.018	I-01A-H9A	05/22/90	CLR	_	N	
C03.040.037	1-03-H15B	05/11/90	CLR	_	N	
C03.040.038	1-03-H9B	05/23/90	REC	_	N	REQUEST FOR RELIEF ONS-0013
C03.040.050	1-53B-H17	04/05/90	CLR	_	N	
C03.040.053	1-53B-R29	05/14/90	CLR	_	N	
C03.040.059	1-53B-DE062	04/04/90	CLR	_	N	
C03.040.062	1-54A-H5	04/23/90	CLR	_	N	
C03.040.065	1-54A-R6	04/05/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C04.040.001	1-01A-SV1-STUD	05/05/90	CLR	_	N	

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ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C05.011.027	1-53B-3.1-42E	04/04/90	CLR	_	N	
C05.011.034	1-53B-16-4	05/01/90	CLR	_	N	
C05.011.035	1-53B-7.2-20KA	04/05/90	CLR	_	N	
C05.011.036	1-53B-7.2-11K	04/11/90	CLR	_	N	
C05.011.038	1-53B-7.1-30A	04/05/90	CLR	_	N	
C05.011.039	1-53B-7.1-26	04/05/90	CLR	_	N	
C05.011.044	1-53B-3.4-32F	04/04/90	CLR	_	N	
C05.011.085B	1-53B-14-1C	05/02/90	CLR	_	N	
C05.011.086	1-53B-14-1D	05/02/90	CLR	_	N	
C05.011.087	1-53B-14-1E	05/02/90	CLR	_	N	
C05.011.093	1-53B-10-B64	04/30/90	CLR	_	N	
C05.011.151	1-53A-2.4-78LA	05/03/90	CLR	_	N	
C05.011.205	1-54A-1.3-15A	04/04/90	CLR	_	N	
C05.011.206	1-54A-3.1-2C	04/11/90	CLR	_	N	
C05.011.207	1-54A-3.1-6CC	04/04/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C05.011.220	1-54A-1.1-19A	04/04/90	CLR	_	N	
C05.011.264	1-51A-1.1-39A	05/21/90	CLR	_	N	
C05.011.268	1-51A-1.2-43A	05/21/90	CLR	_	N	
C05.011.271	1-51A-1.2-48A	05/16/90	CLR	_	N	
C05.012.021	1-54A-3.1-2CL	04/11/90	CLR	_	N	
C05.012.026	1-53B-10-B77L	04/23/90	CLR	_	N	
C05.031.008	1-53B-6.2-26KC	04/05/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
C07.020.006	1-OFD-101A-1.4	04/17/90	CLR	_	N	ALSO INSP. 110187 STATUS - CLR
C07.020.007	1-OFD-101A-1.3	04/17/90	CLR	_	N	ALSO INSP. 110187 STATUS - CLR
C07.030.004	1HPI-PUMP-1C	04/17/90	CLR	_	N	ALSO INSP. 110187 STATUS - CLR

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
D01.011.015	1-OFD-135A-1.2	05/09/89	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
D02.011.003	1-OFD-121A-1.7	06/21/90	CLR	_	N	
D02.011.004	1-OFD-121A-1.8	06/21/90	REC	_	N	
D02.011.005	1-OFD-121B-1.3	02/12/90	CLR	_	N	
D02.011.006	1-OFD-121B-1.5	02/14/90	CLR	_	N	
D02.011.021	1-OFD-133A-2.5	02/13/90	CLR	_	N	
D02.011.023	1-OFD-133A-1.2	05/29/90	CLR	_	N	
D02.011.025	1-OFD-133A-1.5	05/29/90	CLR	_	N	
D02.011.026	1-OFD-133A-2.1	05/29/90	CLR	_	N	
D02.011.027	1-OFD-133A-2.2	05/29/90	CLR	_	N	
D02.011.028	1-OFD-133A-3.2	05/29/90	CLR	_	N	
D02.011.029	1-OFD-133A-3.4	05/29/90	CLR	_	N	
D02.011.032	1-OFD-124A-1.3	02/09/90	CLR	_	N	
D02.011.034	1-OFD-124B-1.1	06/19/90	CLR	_	N	
D02.011.035	1-OFD-124B-2.1	06/19/90	CLR	_	N	
D02.011.041	1-OFD-121C-1.1	06/19/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
D02.011.042	1-OFD-124C-1.2	06/19/90	CLR	_	N	
D02.011.043	1-OFD-133A-3.1	05/29/90	CLR	_	N	
D02.020.020	1-03A-SR39	03/20/90	CLR	_	N	
D02.020.021	1-03A-H24	03/20/90	CLR	_	N	
D02.020.032	1-03A-SR75	03/21/90	CLR	_	N	
D02.020.034	1-03A-H47	03/06/90	CLR	_	N	
D02.020.035	1-03A-SR79	03/06/90	CLR	_	N	
D02.020.036	1-03A-H48	03/06/90	CLR	_	N	
D02.020.037	1-03A-SR80	03/06/90	CLR	_	N	
D02.020.062	1-03A-SR87	03/08/90	CLR	_	N	
D02.020.077	1-03A-H11	05/01/90	CLR	_	N	
D02.020.082	1-03A-SR47	04/19/90	CLR	_	N	
D02.020.087	1-03A-H72(A)	04/09/90	CLR	_	N	
D02.020.096	1-03A-SR86	03/08/90	CLR	_	N	
D02.020.101	1-03A-H46	03/08/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
D02.020.102	1-03A-H12	05/01/90	CLR	_	N	
D02.020.107	1-03A-SR17	03/14/90	CLR	_	N	
D02.020.135	1-03A-SR18	03/14/90	CLR	_	N	
D02.030.001	1-01A-R6	03/21/90	CLR	_	N	

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
D03.011.001	1-OFD-104A-1.1	05/14/90	CLR	_	N	

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E01.001.004	1RCP-1B2	03/01/90	CLR	L	N	BASELINE RFO # 12
E01.001.004A	1RCP-1B2	02/28/90	CLR	_	N	BASELINE RFO # 12

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F1.01.069	1-51A-H8C	05/17/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.074	1-51A-H5C	05/19/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.076	1-51A-H7C	05/17/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.078	1-51A-H2A	05/17/90	CLR	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.079	1-51A-H3A	05/03/90	REC	_	N	
F1.01.080	1-51A-H4A	05/03/90	REC	_	N	
F1.01.081	1-51A-H5A	05/03/90	REC	_	N	
F1.01.082	1-51A-H6A	05/10/90	CLR	_	N	
F1.01.083	1-51A-H7A	05/03/90	REP	_	N	PIR# 1-090-0046
F1.01.084	1-51A-H8A	05/17/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.085	1-51A-H9A	06/01/90	CLR	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.087	1-51A-H12A	05/03/90	CLR	_	N	
F1.01.088	1-51A-H13A	05/03/90	CLR	_	N	
F1.01.091	1-51A-H16A	05/17/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)
F1.01.092	1-51A-H10A	05/17/90	REC	_	N	INSP.RFO#12 PER IWF-2430(A)

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F1.01.150	1-53A-H8A	05/03/90	CLR	_	N	
F1.01.164	1-53A-H35C	05/03/90	REC	_	N	
F1.01.165	1-53A-H36C	05/03/90	REC	_	N	
F1.01.166	1-53A-H37C	05/03/90	REC	_	N	
F1.01.171	1-53A-H4A	05/10/90	REC	_	N	
F1.02.017	1-01A-DE006	05/21/90	CLR	_	N	
F1.02.018	1-01A-R2	05/01/90	CLR	_	N	
F1.02.037	1-01A-H2B	05/03/90	CLR	_	N	
F1.02.070	1-01A-H22(A)	05/01/90	REC	_	N	
F1.02.117	1-03-H62	02/26/90	CLR	_	N	
F1.02.136	1-03-H5B	05/03/90	REC	_	N	
F1.02.140	1-03-H9B	05/11/90	CLR	_	N	
F1.02.142	1-03-H5A	05/11/90	CLR	_	N	
F1.02.209	1-03A-H71	02/26/90	CLR	_	N	
F1.02.251	1-51A-DE064	05/01/90	CLR	_	N	

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F1.02.285	1-53B-DE050	05/22/90	CLR	_	N	
F1.02.286	1-53B-H25	04/25/90	CLR	_	N	
F1.02.287	1-53B-0279	04/25/90	CLR	_	N	
F1.02.288	1-53B-DE052	04/25/90	CLR	_	N	
F1.02.291	1-53B-R3	04/09/90	CLR	_	N	
F1.02.305	1-53A-DE078	03/07/90	CLR	_	N	
F1.02.306	1-53B-R2401	03/07/90	CLR	_	N	
F1.02.307	1-53B-H23	03/07/90	CLR	_	N	
F1.02.308	1-53B-R5	03/07/90	REC	_	N	
F1.02.343	1-53B-2601	04/09/90	CLR	_	N	
F1.02.344	1-53B-2602	04/09/90	REC	_	N	
F1.02.345	1-53B-R29	04/09/90	CLR	_	N	
F1.02.346	1-53B-H57	02/26/90	CLR	_	N	
F1.02.347	1-53B-H58A	02/26/90	CLR	_	N	
F1.02.348	1-53B-H17	05/03/90	REC	_	N	

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F1.02.392	1-53B-H3	03/20/90	CLR	_	N	
F1.02.393	1-53B-H1	03/20/90	CLR	_	N	
F1.02.394	1-53B-DE068	03/22/90	CLR	_	N	
F1.02.396	1-53B-DE069	05/01/90	CLR	_	N	
F1.02.404	1-53B-H12	03/22/90	CLR	_	N	
F1.02.405	1-53A-H3B	05/10/90	REC	_	N	
F1.02.406	1-53A-H5A	05/03/90	REC	_	N	
F1.02.453	1-54A-H35	03/20/90	CLR	_	N	
F1.02.460	1-54A-DE014	03/22/90	CLR	_	N	
F1.02.461	1-54A-DE015	03/22/90	CLR	_	N	
F1.02.463	1-54A-DE016	03/22/90	CLR	_	N	
F1.02.472	1-54A-R6	03/07/90	CLR	_	N	
F1.02.475	1-54A-R19	03/28/90	REC	_	N	
F1.02.500	1-54A-R21	04/09/90	CLR	_	N	
F1.02.502	1-54A-R22	04/09/90	CLR	_	N	

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F1.02.503	1-54A-H5	03/20/90	REC	_	N	
F1.03.001	1-01A-H1	03/07/90	CLR	_	N	
F1.03.002	1-01A-H2	04/18/90	CLR	_	N	
F1.03.003	1-01A-R6	03/21/90	CLR	_	N	
F1.03.058	1-03-H54	03/20/90	CLR	_	N	
F1.03.064	1-03-H60	03/07/90	CLR	_	N	
F1.03.118	1-03A-SR47	04/19/90	CLR	_	N	
F1.03.120	1-03A-SR39	03/20/90	CLR	_	N	
F1.03.121	1-03A-H24	03/20/90	CLR	_	N	
F1.03.122	1-03A-H25	05/04/90	CLR	_	N	
F1.03.150	1-03A-H72 (A)	04/09/90	CLR	_	N	
F1.03.151	1-03A-H70	03/20/90	CLR	_	N	
F1.03.152	1-03A-SR62	03/20/90	CLR	_	N	
F1.03.175	1-03A-H78	02/26/90	CLR	_	N	
F1.03.176	1-03A-SR64	02/26/90	CLR	_	N	

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OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
F1.03.207	1-03A-SR86	03/08/90	CLR	_	N	
F1.03.231	1-03A-SR75	03/21/90	CLR	_	N	
F1.03.237	1-03A-H46	03/08/90	CLR	_	N	
F1.03.238	1-03A-SR52	01/31/90	CLR	_	N	
F1.03.239	1-03A-H47	03/06/90	CLR	_	N	
F1.03.240	1-03A-SR79	03/06/90	CLR	_	N	
F1.03.241	1-03A-H48	03/06/90	CLR	_	N	
F1.03.242	1-03A-SR80	03/06/90	CLR	_	N	
F1.03.314	1-03A-DE031	02/16/90	CLR	_	N	
F1.03.323	1-03A-SR17	03/14/90	CLR	_	N	
F1.03.324	1-03A-SR18	03/14/90	CLR	_	N	
F1.03.358	1-03A-SR87	03/08/90	CLR	_	N	
F1.03.367	1-03A-H144	01/31/90	CLR	_	N	
F1.03.371	1-03A-H149	01/31/90	CLR	_	N	
F1.03.372	1-03A-H131	01/31/90	CLR	_	N	

DUKE POWER COMPANY
QUALITY ASSURANCE DEPARTMENT
PRE-SERVICE AND IN-SERVICE INSPECTION SYSTEM
OCONEE 1 INSERVICE INSPECTION RESULTS OUTAGE 12

ITEM NUMBER	ID NUMBER	INSPECTION DATE	INSPECTION STATUS	INSPECTION LIMITED	GEO. REF.	COMMENTS
F1.03.388	1-03A-H189	01/31/90	CLR	_	N	
F1.03.389	1-03A-H188	01/31/90	CLR	_	N	
F1.03.390	1-03A-SR36	01/31/90	CLR	_	N	
F1.03.391	1-03A-H5231	02/27/90	CLR	_	N	
F1.03.392	1-03A-H4	03/20/90	CLR	_	N	
F1.03.393	1-03A-H5230	02/27/90	CLR	_	N	
F1.03.394	1-03A-H5229	03/20/90	CLR	_	N	
F1.03.405	1-03A-H11	05/01/90	CLR	_	N	
F1.03.406	1-03A-H12	05/01/90	CLR	_	N	
F1.03.418	1-03A-H2B	05/03/90	CLR	_	N	
F1.03.419	1-03-H6068	05/03/90	CLR	_	N	
F1.03.420	1-03A-DE003	03/07/90	REC	_	N	
F1.03.450	1-07A-H8	03/07/90	CLR	_	N	

5.0 Class 1 Inspection Results

Examinations were performed during Outage 12 on the Reactor Vessel, Pressurizer, Steam Generators 1A and 1B, Letdown Cooler 1A, Class 1 Piping of the Reactor Coolant, Low Pressure Injection and High Pressure Injection Systems, Reactor Coolant Pump Bolting, Valve Bolting and Supports.

5.1 Reactor Vessel

Reactor Vessel Upper Head Weld (Upper Head Ring to Upper Head Cap) from 240 degrees to 0 degrees received an ultrasonic inspection. Reactor Vessel Upper Head Flange to Upper Head Ring Weld from 240 degrees to 0 degrees received an ultrasonic and a magnetic particle examination. Four (4) welds in one (1) CRDM Housing received a dye penetrant examination. No reportable indications were found.

5.2 Pressurizer

Pressurizer Support Lug Welds located at Z-axis and between Z-W axis received a magnetic particle examination. No reportable indications were found.

5.3 Steam Generators

Steam Generator 1B Upper Head to Tubesheet Weld received an ultrasonic inspection. Reportable indications were found (Weld 1SGB-WG-58-1, Item Number B02.040.003). Indications were evaluated and found acceptable. (Refer to Babcock and Wilcox Volumetric Examination Evaluation Report 901-002, dated May 8, 1990, and Babcock and Wilcox Fracture Mechanics Analysis Report Number 32-1179753-00, included in Section 10 of this report.) The scope of the inspection was expanded per ASME Section XI, Paragraph IWB-2430(a) to include Steam Generator 1B Lower Head to Tubesheet Weld, Item Number B02.040.004 (refer to Problem Investigation Report No. 1-090-0052), included in Section 9 of this report. A copy of the inspection data sheets is included in this section of the report. No other reportable indications were found.

Steam Generator 1A Support Skirt to Head Weld received a magnetic particle examination. No reportable indications were found.

5.4 Letdown Coolers

Letdown Cooler 1A Outlet Channel Body to End Plate Weld and Tubeside Outlet Nozzle to Channel Body Weld received ultrasonic examinations. No reportable indications were found.

5.5 Piping

Dissimilar Metal Butt Welds:

Two (2) Reactor Coolant Pump 1A2 Safe End to Pipe Welds and one (1) Surge Nozzle Safe End Weld, nominal pipe size four inches and greater,

received ultrasonic and dye penetrant examinations. No reportable indications were found.

Similar Metal Butt Welds:

Six (6) circumferential butt welds, nominal pipe size four inches and greater, received ultrasonic and dye penetrant examinations. Two (2) longitudinal welds, nominal pipe size four inches and greater, received ultrasonic and magnetic particle examinations. Nine (9) circumferential butt welds, nominal pipe size less than four inches, received a dye penetrant examination. No reportable indications were found.

Piping Integrally-Welded Attachments:

One (1) integrally-welded attachment on the Low Pressure Injection System received a dye penetrant examination. No reportable indications were found.

Piping Supports:

Twelve (12) Class 1 component Supports received a visual examination as required by ASME Section XI, Article IWF-2000. A reportable condition was detected on Component Support 1-51A-0-479A-H7A (Item No. F1.01.083). Duke Power Company Design Engineering evaluated the reportable condition and determined that the pipe will remain within code tolerances as found (refer to Problem Investigation Report 1-090-0046 included in Section 9 of this report). The scope of the inspection was extended per ASME Section XI, Paragraph IWF-2430(a) to include eight (8) additional supports in the High Pressure Injection System. A copy of the inspection data sheet is included in this section of the report. No other reportable conditions were found.

5.6 Pumps

Reactor Coolant Pump 1A2 Main Flange Bolts received an ultrasonic examination. No reportable indications were found.

Reactor Coolant Pump 1A2 Lower Seal Housing Bolts (twelve (12) Cap Screws) received a visual examination. No reportable conditions were found.

5.7 Valves

Two (2) Decay Heat Emergency Dump Valves (LP-103 and LP-104) received a visual examination. No reportable conditions were found.

5.8 Steam Generator Tubing

The tubing in Once-Through Steam Generators (OTSGs) "A" and "B" at Oconee Unit 1 was inspected using eddy current bobbin coil multi-frequency techniques and B&W's Eddy-360 rotating pancake coil probe. The sleeves in both OTSGs were also inspected with bobbin coil and crosswound probes. The eddy current examinations began on May 2, 1990

and were completed on May 18, 1990. A brief summary of the eddy current examination follows:

OTSG "A"

Tubing Examination:

9332 tubes were examined using the standard bobbin coil technique.

9 tubes exhibited degradation of 40% TW or greater.

12 tubes exhibited degradation of 20% to 39% TW.

Ten (10) tubes were removed from service in OTSG "A" due to indications exceeding the plugging limit or from good engineering practices. A list of these tubes for OTSG "A" is attached.

Sleeve Examination:

262 sleeves were examined using both standard bobbin coil and crosswound probes.

There was no degradation reported in any of the sleeves examined and no sleeves were removed from service.

OTSG "B"

Tubing Examination:

9328 tubes were examined using the standard bobbin coil and crosswound probes.

49 tubes exhibited degradation of 40% TW or greater. Three of the tubes (102-9, 108-111, & 108-114) contained wear indications sized as less than 40% TW using B&W's Eddy-360 and were not removed from service.

168 tubes exhibited degradation of 20 to 39% TW.

Forty-nine (49) tubes were removed from service in OTSG "B" due to indications exceeding the plugging limit or from good engineering practices. A list of these tubes for OTSG "B" is attached.

Sleeve Examination:

209 sleeves were examined using both standard bobbin coil and crosswound probes.

There was no degradation reported in any of the sleeves examined and no sleeves were removed from service.

5.9 System Leakage Tests

The Class 1 Pressure Boundary was subjected to a system leakage test as required by ASME Section XI, Article IWB-5000. No reportable conditions were found.

5.10 Class 1 Repairs and Replacements

Repairs and replacements for work performed from February 14, 1989 to June 4, 1990 are itemized in Section 11 of this report.

EC FIELD SYSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 6:20 AM **** BABCOCK & WILCOX CO. ****¶ Page

Plant: Oconee Unit 1 Steam Generator: A
Outage: 05/90 RFO

¶ QUERY: INDICATIONS 40-100% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	6	13	ODI	40	1.85	M 1	92	14TH TSP+	0.61	FL	6	B0690	
FINAL DATA	20	42	ODI	56	2.27	3	82	14TH TSP+	0.38	FL	20	W6871	
FINAL DATA	40	116	ODI	43	1.06	3	99	1ST TSP +	0.68	FL	70	H8259	
FINAL DATA	61	17	ODI	40	1.00	M 1	92	14TH TSP+	0.49	FL	48	N0942	
FINAL DATA	64	116	ODI	49	1.42	M 1	85	8TH TSP +	0.00	FL	54	N0942	
FINAL DATA	72	126	ODI	46	1.33	M 1	90	11TH TSP+	0.77	FL	129	T4004	
FINAL DATA	85	5	ODI	61	1.15	M 1	72	14TH TSP+	0.60	14TH TSP	3	N0942	
FINAL DATA	86	6	ODI	40	2.43	M 1	92	14TH TSP+	0.18	FL	123	S4373	
FINAL DATA	86	131	ODI	45	0.68	M 1	95	10TH TSP-	0.59	FL	140	N0942	

TOTAL TUBES FOUND = 9
TOTAL INDICATIONS FOUND = 9
TOTAL TUBES IN INPUT FILE = 15531

EC FIELD SYSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 6:22 AM **** BABCOCK & WILCOX CO. ****¶ Page

Plant: Oconee Unit 1 Steam Generator: A
Outage: 05/90 RFO

RECOVERY: INDICATIONS 20-39% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	7	14	ODI	22	0.94	M 1	110	6TH TSP +	0.30	FL	7	T4004	
FINAL DATA	18	43	ODI	26	0.83	3	105	14TH TSP+	0.34	FL	19	W6871	
FINAL DATA	56	6	ODI	32	1.13	M 1	98	14TH TSP+	0.19	FL	45	N0942	
FINAL DATA	60	2	ODI	20	1.83	M 1	98	14TH TSP-	0.11	FL	48	T4004	
FINAL DATA	61	1	ODI	38	0.56	M 1	89	9TH TSP -	0.46	FL	48	T4004	
FINAL DATA	62	115	ODI	39	1.25	M 1	91	9TH TSP +	0.00	FL	54	N0942	
FINAL DATA	65	128	ODI	39	1.03	3	96	14TH TSP+	1.09	FL	54	B0690	
FINAL DATA	66	3	ODI	32	0.90	3	100	14TH TSP+	0.50	14TH TSP	1	N0942	
FINAL DATA	116	113	ODI	38	2.81	M 1	92	14TH TSP+	0.80	FL	112	S4373	
FINAL DATA	134	30	ODI	36	0.64	M 1	96	8TH TSP -	0.34	FL	95	T4004	
FINAL DATA	137	3	ODI	21	0.87	M 1	104	14TH TSP+	0.57	FL	90	H8259	
FINAL DATA	147	39	ODI	33	0.47	3	99	4TH TSP +	0.79	FL	77	N0942	
FINAL DATA			ODI	28	0.61	M 1	95	4TH TSP +	0.21	FL	77	N0942	

TOTAL TUBES FOUND = 12
TOTAL INDICATIONS FOUND = 13
TOTAL TUBES IN INPUT FILE = 15531

***** B&W TUBAN(TM) (VER. 3.1)****** Thursday June 7, 1990 01:02 PM **

Plant: OCONEE UNIT 1 Steam Generator: A

Order: Sort by ROW, TUBE

Title: TUBES PLUGGED - 5/90 RFO

NO.	ROW	TUBE
1.	6-	13
2.	20-	42
3.	40-	116
4.	61-	17
5.	64-	116
6.	65-	128
7.	72-	126
8.	85-	5
9.	86-	6
10.	86-	131

* B[redacted] EC FIELD SYSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 1:21 PM **** BABCOCK & WILCOX CO. **** Page 1

Pl[redacted]: Oconee Unit 1 Steam Generator: B
Outage: 05/90 RFO

[redacted]: INDICATIONS 40-100% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	9	36	ODI	41	0.95	M 1	94	9TH TSP -	1.44	FL	59	T4004	
FINAL DATA	11	47	ODI	50	2.70	M 1	86	14TH TSP+	0.15	FL	61	T4004	
FINAL DATA	19	15	ODI	40	1.08	M 1	97	14TH TSP+	0.55	FL	72	T4004	
FINAL DATA	20	54	ODI	43	0.98	3	95	3RD TSP +	9.01	FL	74	B0690	
FINAL DATA	22	93	ODI	44	0.60	M 1	91	11TH TSP-	0.03	FL	77	W6871	
FINAL DATA	24	86	ODI	48	0.65	M 1	91	14TH TSP+	0.67	FL	80	T4004	
FINAL DATA	25	88	ODI	43	0.79	3	94	14TH TSP+	0.54	FL	80	N0942	
FINAL DATA	26	88	ODI	45	1.01	M 1	82	14TH TSP+	0.06	FL	82	H3921	
FINAL DATA	27	9	ODI	41	1.07	M 1	94	9TH TSP -	1.38	FL	84	S4373	
FINAL DATA	29	88	ODI	53	1.18	M 1	83	14TH TSP+	0.39	FL	87	H8259	
FINAL DATA	30	105	ODI	43	1.15	M 1	84	10TH TSP-	0.47	FL	88	N0942	
FINAL DATA	32	72	ODI	44	1.02	M 1	94	12TH TSP+	0.00	FL	89	B0690	
FINAL DATA	35	73	ODI	41	0.73	M 1	87	12TH TSP-	0.14	FL	94	B0690	
FINAL DATA	43	116	ODI	40	1.22	M 1	87	11TH TSP+	0.05	FL	103	S4373	
FINAL DATA	44	118	ODI	42	1.19	M 1	89	10TH TSP-	0.06	FL	104	H8259	
FINAL DATA	44	119	ODI	41	1.06	M 1	84	10TH TSP-	0.22	FL	104	H8259	
FINAL DATA	50	119	ODI	40	1.19	M 1	85	14TH TSP+	0.00	FL	109	L7871	
FINAL DATA	52	3	ODI	48	3.12	M 1	78	14TH TSP+	0.00	FL	124	B0690	
FINAL DATA	52	4	ODI	83	6.88	M 1	46	14TH TSP+	0.00	FL	124	B0690	
FINAL DATA	61	125	ODI	47	0.70	3	87	12TH TSP+	0.95	FL	135	N0942	
FINAL DATA	68	119	ODI	48	1.22	3	87	14TH TSP+	1.00	FL	134	K3921	
FINAL DATA	69	4	ODI	43	3.06	M 1	114	13TH TSP+	0.00	14TH TSP	3	M7006	
FINAL DATA	86	16	ODI	46	1.95	M 1	90	12TH TSP-	0.08	FL	46	W6871	
FINAL DATA	93	7	ODI	48	0.87	M 1	89	14TH TSP+	0.06	FL	5	W6871	
FINAL DATA	94	2	ODI	55	3.51	M 1	83	13TH TSP+	0.29	FL	5	W6871	
F[redacted] DATA	94	12	ODI	43	3.01	M 1	93	14TH TSP+	0.40	FL	5	W6871	
F[redacted] DATA	94	119	ODI	40	0.93	M 1	82	8TH TSP +	0.00	FL	86	N0942	
F[redacted] DATA	95	128	ODI	44	0.90	M 1	89	11TH TSP-	0.16	FL	83	N0942	
F[redacted] DATA	102	9	WAR	49	1.45	M 1	88	11TH TSP+	0.00	FL	8	N0942	
FINAL DATA	103	54	ODI	44	1.11	3	92	7TH TSP +	0.70	FL	9	M7006	
FINAL DATA	108	111	WAR	45	1.23	M 1	82	13TH TSP+	0.00	FL	73	N0942	
FINAL DATA	108	114	WAR	45	4.93	M 1	83	13TH TSP+	0.00	FL	53	L7871	
[redacted]L DATA			WAR	59	2.76	M 1	71	12TH TSP+	0.00	FL	53	L7871	
[redacted]AL DATA	116	6	ODI	40	2.35	M 1	93	12TH TSP+	0.20	FL	15	W6871	
FINAL DATA	116	105	WAR	80	1.41	M 1	69	13TH TSP+	0.00	FL	50	B0690	
FINAL DATA			ODI	43	1.66	M 1	92	9TH TSP +	0.00	FL	50	B0690	
FINAL DATA	118	20	ODI	40	1.81	M 1	94	14TH TSP+	0.00	FL	16	W6871	
FINAL DATA	125	93	ODI	41	1.32	M 1	94	9TH TSP -	1.39	FL	48	W6871	
FINAL DATA	128	20	ODI	42	1.79	M 1	89	9TH TSP -	0.03	FL	22	K3921	
FINAL DATA	128	35	ODI	42	1.13	3	95	LTSF +	20.54	FL	22	N3921	
FINAL DATA	130	84	ODI	42	1.22	M 1	96	9TH TSP -	0.18	FL	25	T4004	
FINAL DATA	131	82	ODI	48	1.09	M 1	91	9TH TSP -	0.21	FL	25	T4004	
FINAL DATA	132	8	ODI	52	1.20	M 1	78	14TH TSP-	0.11	FL	26	N0942	
FINAL DATA	135	3	ODI	58	4.92	M 1	81	14TH TSP+	0.00	FL	30	N0942	
FINAL DATA	136	3	ODI	52	1.19	M 1	88	14TH TSP-	0.03	FL	31	N0942	
FINAL DATA	137	18	ODI	55	9.31	M 1	85	10TH TSP+	0.10	FL	32	S4373	
FINAL DATA	139	65	ODI	41	0.95	M 1	92	9TH TSP -	0.11	FL	34	M7006	
FINAL DATA	140	3	ODI	44	0.64	M 1	91	14TH TSP-	1.52	FL	35	W6871	
FINAL DATA	140	9	ODI	40	0.86	M 1	94	9TH TSP -	1.48	FL	35	W6871	
FINAL DATA	140	17	ODI	43	1.45	M 1	92	9TH TSP -	1.37	FL	35	W6871	
FINAL DATA	145	52	ODI	44	1.01	3	93	7TH TSP +	0.44	FL	39	W6871	

TOTAL TUBES FOUND = 49
TOTAL INDICATIONS FOUND = 51
TOTAL TUBES IN INPUT FILE = 15531

EC FIELD SYSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 1:16 PM **** BABCOCK & WILCOX CO. **** Page 1

Plant: Oconee Unit 1 Steam Generator: B
Outage: 05/90 RFO

Y: INDICATIONS 20-39% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	1	8	ODI	24	0.82	M 1	110	10TH TSP+	0.52	FL	55	N0942	
FINAL DATA	3	1	ODI	20	1.56	3	114	14TH TSP+	0.75	FL	55	H8259	
FINAL DATA	3	30	ODI	29	1.24	M 1	95	10TH TSP-	1.22	FL	55	H8259	
FINAL DATA	4	4	ODI	24	1.22	M 1	99	14TH TSP+	0.46	FL	56	S4373	
FINAL DATA	4	17	ODI	37	1.38	M 1	89	14TH TSP+	0.27	FL	56	S4373	
FINAL DATA	4	39	ODI	33	1.25	M 1	92	10TH TSP-	0.08	FL	55	H8259	
FINAL DATA	5	8	ODI	22	1.76	M 1	100	14TH TSP+	0.22	FL	56	S4373	
FINAL DATA	6	9	ODI	29	0.98	M 1	103	14TH TSP+	0.00	FL	57	T4004	
FINAL DATA	6	19	ODI	25	0.88	M 1	106	14TH TSP+	0.11	FL	57	T4004	
FINAL DATA	6	45	ODI	29	0.61	M 1	103	14TH TSP+	0.11	FL	57	T4004	
FINAL DATA	6	49	ODI	32	0.98	M 1	101	10TH TSP-	1.41	FL	57	T4004	
FINAL DATA	7	11	ODI	37	0.99	M 1	97	14TH TSP+	0.24	FL	57	T4004	
FINAL DATA	7	47	ODI	20	0.92	3	115	14TH TSP+	0.65	FL	58	H3921	
FINAL DATA	9	2	ODI	30	0.85	3	106	14TH TSP+	2.04	FL	59	N0942	
FINAL DATA	9	3	ODI	22	0.73	M 1	108	10TH TSP+	0.03	FL	59	T4004	
FINAL DATA	9	19	ODI	21	1.18	M 1	109	10TH TSP-	1.49	FL	59	T4004	
FINAL DATA	10	21	ODI	37	0.78	M 1	97	14TH TSP+	0.03	FL	59	T4004	
FINAL DATA	10	56	ODI	30	1.09	M 1	102	10TH TSP-	1.39	FL	61	T4004	
FINAL DATA	12	19	ODI	37	1.04	M 1	96	10TH TSP-	1.43	FL	62	W6871	
FINAL DATA	12	69	ODI	33	0.85	3	104	13TH TSP+	0.21	FL	62	W6871	
FINAL DATA	13	17	ODI	33	1.32	M 1	100	10TH TSP-	1.43	FL	63	S4373	
FINAL DATA	14	73	ODI	39	1.38	M 1	88	14TH TSP+	0.54	FL	64	B0690	
FINAL DATA	17	80	ODI	29	1.61	M 1	99	14TH TSP+	0.26	FL	67	B0690	
FINAL DATA	18	2	ODI	20	1.10	M 1	102	8TH TSP +	0.00	FL	123	B0690	
[illegible]NAL DATA	19	2	ODI	20	0.75	M 1	102	8TH TSP +	0.00	FL	123	B0690	
[illegible]NAL DATA	19	3	ODI	35	1.39	M 1	95	8TH TSP +	0.18	FL	123	B0690	
[illegible]NAL DATA	20	47	ODI	25	0.89	M 1	107	10TH TSP+	1.30	FL	74	B0690	
[illegible]NAL DATA	20	48	ODI	34	1.65	M 1	93	10TH TSP+	0.00	FL	74	B0690	
FINAL DATA	20	81	ODI	20	0.61	3	116	13TH TSP+	0.50	FL	75	N0942	
FINAL DATA	21	39	ODI	31	0.91	M 1	95	14TH TSP+	0.18	FL	75	N0942	
FINAL DATA	21	85	ODI	24	0.93	M 1	100	14TH TSP+	0.00	FL	75	N0942	
[illegible]NAL DATA	22	87	ODI	24	0.79	M 1	108	14TH TSP+	0.03	FL	77	W6871	
[illegible]NAL DATA	22	91	ODI	31	1.10	M 1	102	14TH TSP+	0.28	FL	77	W6871	
FINAL DATA	23	10	ODI	38	1.13	M 1	96	9TH TSP -	1.38	FL	79	W6871	
FINAL DATA	23	13	ODI	33	1.22	M 1	100	4TH TSP -	0.03	FL	79	W6871	
FINAL DATA	24	91	ODI	33	0.77	M 1	103	14TH TSP-	0.03	FL	80	T4004	
FINAL DATA	25	35	ODI	22	0.95	3	111	7TH TSP -	0.98	FL	80	N0942	
FINAL DATA	26	34	ODI	32	0.85	M 1	90	7TH TSP -	0.30	FL	82	N0942	
FINAL DATA	26	88	ODI	37	0.82	3	99	14TH TSP+	0.71	FL	82	H3921	
FINAL DATA	26	98	ODI	27	0.67	3	106	14TH TSP+	0.62	FL	84	N0942	
FINAL DATA	27	89	ODI	21	0.75	M 1	109	14TH TSP+	0.37	FL	84	T4004	
FINAL DATA	32	73	ODI	36	0.96	3	101	12TH TSP+	0.96	FL	89	S4373	
FINAL DATA	33	7	ODI	29	1.11	M 1	104	14TH TSP+	0.08	FL	122	B0690	
FINAL DATA	33	100	ODI	33	0.81	M 1	103	14TH TSP-	0.14	FL	89	T4004	
FINAL DATA	33	102	ODI	27	0.66	M 1	108	9TH TSP -	1.51	FL	89	T4004	
FINAL DATA	34	71	ODI	27	1.47	3	106	12TH TSP+	0.45	FL	92	B0690	
FINAL DATA	34	101	ODI	33	2.35	3	102	14TH TSP+	0.62	FL	92	L7871	
FINAL DATA	37	7	ODI	21	1.02	M 1	94	10TH TSP-	0.67	FL	122	B0690	
FINAL DATA	40	15	ODI	26	0.92	M 1	100	11TH TSP+	0.00	FL	100	L7871	
FINAL DATA	41	113	ODI	27	1.25	3	110	14TH TSP+	0.82	FL	100	L7871	
FINAL DATA	42	99	ODI	36	1.41	3	100	14TH TSP+	1.10	FL	103	B0690	
FINAL DATA	43	115	ODI	31	1.20	M 1	94	14TH TSP+	0.71	FL	103	B0690	
FINAL DATA			ODI	38	1.51	M 1	81	14TH TSP+	0.25	FL	103	B0690	
FINAL DATA	45	1	ODI	33	2.16	3	96	2ND TSP +	0.53	FL	119	N0942	
FINAL DATA	45	120	ODI	36	1.30	M 1	88	10TH TSP-	0.03	FL	104	H8259	
FINAL DATA	46	1	ODI	23	1.33	M 1	86	2ND TSP +	0.00	FL	117	L7871	
FINAL DATA	46	11	ODI	26	1.52	M 1	84	14TH TSP+	0.46	FL	117	L7871	
FINAL DATA	47	24	ODI	39	2.09	M 1	76	11TH TSP+	0.00	FL	115	N0942	
FINAL DATA	48	120	ODI	31	1.27	M 1	92	9TH TSP +	0.03	FL	107	H8259	
FINAL DATA	48	121	ODI	22	1.12	M 1	99	10TH TSP-	1.37	FL	107	H8259	
[illegible]NAL DATA	49	2	ODI	28	1.43	3	101	13TH TSP+	0.32	FL	115	L7871	
[illegible]NAL DATA	49	120	ODI	30	1.20	M 1	93	9TH TSP +	0.00	FL	107	B0690	
[illegible]NAL DATA	49	123	ODI	34	0.92	3	101	14TH TSP+	20.54	FL	107	H8259	
FINAL DATA	50	5	ODI	25	1.04	3	103	13TH TSP+	1.47	FL	114	N0942	
FINAL DATA	50	6	ODI	23	1.29	M 1	102	13TH TSP+	1.30	FL	114	N0942	
FINAL DATA	51	121	ODI	22	1.09	M 1	98	14TH TSP+	0.45	FL	109	L7871	
FINAL DATA	58	126	ODI	26	1.94	3	108	14TH TSP+	0.61	FL	118	B0690	
FINAL DATA	59	116	ODI	37	1.51	M 1	84	14TH TSP+	0.59	FL	118	L7871	
[illegible]NAL DATA	59	118	ODI	22	1.67	M 1	95	10TH TSP-	1.50	FL	118	L7871	
[illegible]NAL DATA	61	1	ODI	36	1.04	M 1	97	13TH TSP+	1.04	FL	131	B0690	

EC FIELD SYSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 1:17 PM **** BABCOCK & WILCOX CO. **** Page 2

t: Oconee Unit 1 Steam Generator: B
Outage: 05/90 RFO

Y: INDICATIONS 20-39% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	63	28	ODI	21	1.65	3	105	UTSF -	1.39	FL	126	B0690	
FINAL DATA	66	122	ODI	24	0.66	3	104	14TH TSP+	1.02	FL	132	W6871	
FINAL DATA	67	3	ODI	37	0.39 M	1	120	14TH TSP+	0.00	14TH TSP	3	M7006	
FINAL DATA	67	6	ODI	26	0.31 M	1	130	13TH TSP+	0.20	14TH TSP	3	M7006	
FINAL DATA	67	10	ODI	24	0.87 M	1	101	13TH TSP-	0.05	FL	129	B0690	
FINAL DATA	67	125	ODI	31	1.10	3	100	14TH TSP+	0.35	FL	134	N0942	
FINAL DATA	69	3	ODI	30	0.31 M	1	126	14TH TSP+	0.30	14TH TSP	3	N0942	
FINAL DATA	69	5	ODI	27	0.53 M	1	129	13TH TSP+	0.30	14TH TSP	3	M7006	
FINAL DATA	70	118	ODI	36	0.89 M	1	93	14TH TSP-	0.09	FL	114	T4004	
FINAL DATA	71	3	ODI	31	0.54 M	1	125	14TH TSP+	0.40	14TH TSP	3	B0690	
FINAL DATA	76	118	ODI	30	1.30	3	100	12TH TSP+	0.45	FL	108	W6871	
FINAL DATA	76	120	ODI	23	0.67 M	1	100	12TH TSP-	1.50	FL	108	W6871	
FINAL DATA	77	121	ODI	31	0.79 M	1	96	8TH TSP +	0.05	FL	99	T4004	
FINAL DATA	80	125	ODI	28	0.77 M	1	98	14TH TSP+	0.05	FL	99	T4004	
FINAL DATA	82	129	ODI	25	1.91 M	1	98	10TH TSP-	0.11	FL	98	T4004	
FINAL DATA			ODI	26	1.10 M	1	97	13TH TSP+	0.69	FL	98	T4004	
FINAL DATA	83	119	ODI	25	0.88 M	1	98	14TH TSP+	0.23	FL	98	T4004	
FINAL DATA	84	124	ODI	28	1.42 M	1	97	14TH TSP-	0.08	FL	96	B0690	
FINAL DATA	84	129	ODI	23	1.40 M	1	100	14TH TSP+	0.27	FL	96	B0690	
FINAL DATA	86	125	ODI	23	1.89 M	1	100	14TH TSP+	0.00	FL	96	B0690	
FINAL DATA	86	128	ODI	36	3.85	3	96	13TH TSP+	0.70	FL	96	B0690	
FINAL DATA	88	3	ODI	30	0.76	1	104	14TH TSP+	0.60	14TH TSP	1	B0690	
FINAL DATA	88	124	ODI	33	1.70 M	1	95	14TH TSP+	0.03	FL	93	T4004	
FINAL DATA	89	4	ODI	35	4.13	3	101	14TH TSP+	0.90	FL	4	M3921	
FINAL DATA	89	123	ODI	20	1.99 M	1	118	14TH TSP+	0.08	FL	91	B0690	
FINAL DATA	91	13	ODI	34	1.63 M	1	96	14TH TSP+	0.10	FL	4	M3921	
AL DATA	91	41	ODI	25	0.84 M	1	99	15TH TSP+	0.06	FL	47	W6871	
AL DATA	91	125	ODI	27	2.13	3	102	13TH TSP+	1.13	FL	90	S4373	
L DATA	92	117	ODI	22	2.35	3	106	9TH TSP -	6.20	FL	86	N0942	
AL DATA	93	2	ODI	38	2.22 M	1	97	13TH TSP+	0.09	FL	5	W6871	
FINAL DATA	93	116	ODI	28	2.07 M	1	105	14TH TSP+	0.50	FL	86	S4373	
AL DATA	95	11	ODI	37	1.86 M	1	98	14TH TSP+	0.14	FL	5	W6871	
L DATA	95	13	ODI	34	2.78	3	101	14TH TSP+	0.65	FL	5	W6871	
AL DATA			ODI	33	1.44 M	1	101	14TH TSP+	0.06	FL	5	W6871	
FINAL DATA	95	117	ODI	38	1.33 M	1	93	8TH TSP -	1.37	FL	83	W6871	
FINAL DATA	95	123	ODI	23	0.57 M	1	102	12TH TSP+	0.23	FL	83	W6871	
FINAL DATA	99	123	ODI	25	0.64 M	1	100	14TH TSP+	0.21	FL	81	N0942	
FINAL DATA	102	9	MAR	36	1.12 M	1	98	13TH TSP+	0.00	FL	8	N0942	
FINAL DATA	102	13	ODI	31	0.75 M	1	102	14TH TSP+	0.40	FL	8	N0942	
FINAL DATA	102	94	ODI	26	1.28	3	104	15TH TSP+	40.80	FL	105	B0690	
FINAL DATA	103	8	MAR	39	1.34 M	1	94	12TH TSP+	0.00	FL	9	M7006	
FINAL DATA	103	53	ODI	26	1.70 M	1	104	7TH TSP +	0.00	FL	9	M7006	
FINAL DATA	103	116	ODI	26	0.75 M	1	98	14TH TSP+	0.30	FL	78	T4004	
FINAL DATA	104	120	ODI	26	1.30 M	1	106	10TH TSP-	1.50	FL	53	B0690	
FINAL DATA	108	57	ODI	36	1.03 M	1	98	7TH TSP +	0.10	FL	11	M7006	
FINAL DATA	108	111	MAR	34	1.33 M	1	93	11TH TSP+	0.00	FL	73	N0942	
FINAL DATA	108	112	ODI	22	1.68 M	1	99	10TH TSP-	1.29	FL	73	B0690	
FINAL DATA	110	5	ODI	36	0.91 M	1	100	9TH TSP -	1.30	FL	12	B0690	
FINAL DATA	111	1	ODI	24	1.50 M	1	105	12TH TSP+	0.10	FL	13	W6871	
FINAL DATA			ODI	35	0.72	3	100	4TH TSP +	0.70	FL	13	W6871	
FINAL DATA	111	3	ODI	37	1.09 M	1	95	14TH TSP+	0.10	FL	13	B0690	
FINAL DATA	111	110	ODI	26	1.43 M	1	105	10TH TSP-	0.60	FL	52	B0690	
FINAL DATA	112	5	ODI	28	1.60 M	1	102	9TH TSP -	1.40	FL	13	W6871	
FINAL DATA	112	117	ODI	34	1.19 M	1	98	7TH TSP +	0.14	FL	52	S4373	
FINAL DATA	113	6	ODI	29	1.03 M	1	99	9TH TSP -	1.30	FL	14	B0690	
FINAL DATA	114	6	ODI	29	1.06 M	1	99	9TH TSP -	1.30	FL	14	B0690	
FINAL DATA	116	1	ODI	33	1.31	3	100	14TH TSP+	7.40	FL	15	N0942	
FINAL DATA	116	5	ODI	32	2.58	3	101	5TH TSP +	0.50	FL	15	W6871	
FINAL DATA	116	22	ODI	37	1.59 M	1	95	10TH TSP+	0.00	FL	15	W6871	
FINAL DATA	117	106	ODI	24	1.00	3	111	13TH TSP+	0.43	FL	50	B0690	
FINAL DATA	118	97	ODI	35	0.97 M	1	97	8TH TSP +	0.00	FL	50	B0690	
NAL DATA	120	4	ODI	38	1.46 M	1	95	14TH TSP+	0.39	FL	17	T4004	
AL DATA	121	104	ODI	35	1.38 M	1	98	10TH TSP+	0.00	FL	49	B0690	
AL DATA	122	4	ODI	35	0.67	3	100	13TH TSP+	0.51	FL	18	M7006	
AL DATA	123	4	ODI	34	1.30 M	1	97	3RD TSP +	0.05	FL	19	M7006	
FINAL DATA	123	49	ODI	24	0.91	3	108	LTSF +	10.68	FL	18	M7006	MBM
FINAL DATA	123	89	ODI	34	1.21	3	102	8TH TSP +	0.53	FL	48	W6871	
FINAL DATA	124	6	ODI	20	0.94 M	1	106	4TH TSP +	0.05	FL	19	M7006	
NAL DATA	124	11	ODI	22	1.90 M	1	105	14TH TSP+	0.00	FL	19	M7006	
L DATA	124	95	ODI	36	1.35 M	1	98	9TH TSP -	1.33	FL	48	W6871	

EC FIELD STSTEM (TM) (VER. 3.1) **** Thursday June 7, 1990 1:17 PM **** BABCOCK & WILCOX CO. **** Page 3

nt: Oconee Unit 1 Steam Generator: B
utage: 05/90 RFO

: INDICATIONS 20-39% TWD

TEST	ROW	COL	IND	%TW	VOLTS	CHN	DEG	LOCATION		EXTENT	TAPE	ANLST	COMMENTS
FINAL DATA	128	92	ODI	28	0.57	M 1	105	9TH TSP -	0.16	FL	23	T4004	
FINAL DATA			ODI	31	0.67	M 1	103	9TH TSP -	1.31	FL	23	T4004	
FINAL DATA	129	54	ODI	36	0.84	3	101	7TH TSP +	0.75	FL	24	M3921	
FINAL DATA	130	93	ODI	28	0.95	M 1	107	14TH TSP+	0.08	FL	25	T4004	
FINAL DATA	131	5	ODI	34	1.01	M 1	93	13TH TSP+	0.08	FL	26	N0942	
FINAL DATA	131	9	ODI	21	0.94	3	113	14TH TSP+	0.59	FL	26	M3921	
FINAL DATA	134	11	ODI	26	0.76	M 1	105	9TH TSP -	1.49	FL	28	M7006	
FINAL DATA	136	4	ODI	36	0.63	M 1	100	14TH TSP+	0.41	FL	31	N0942	
FINAL DATA	136	8	ODI	26	1.15	M 1	107	10TH TSP-	1.43	FL	31	M7006	
FINAL DATA	138	5	ODI	25	2.42	M 1	110	14TH TSP+	0.64	FL	33	T4004	
FINAL DATA	138	16	ODI	34	0.99	M 1	103	10TH TSP+	0.18	FL	33	T4004	
FINAL DATA	138	58	ODI	31	0.64	M 1	105	9TH TSP -	0.29	FL	33	T4004	
FINAL DATA	139	19	ODI	36	1.14	M 1	96	9TH TSP -	1.52	FL	34	M7006	
FINAL DATA	139	56	ODI	21	0.80	M 1	107	10TH TSP-	1.61	FL	34	M7006	
FINAL DATA	139	74	ODI	39	1.88	M 1	94	12TH TSP+	0.24	FL	34	M7006	
FINAL DATA	141	34	ODI	24	0.75	3	108	UTSF -	0.70	FL	36	B0690	
FINAL DATA	141	64	ODI	28	0.91	3	105	14TH TSP+	0.54	FL	36	B0690	
FINAL DATA	142	14	ODI	33	1.67	M 1	99	9TH TSP -	1.39	FL	37	W6871	
FINAL DATA	142	49	ODI	38	0.95	M 1	88	10TH TSP-	1.45	FL	37	B0690	
FINAL DATA	143	14	ODI	37	1.53	M 1	94	9TH TSP -	1.47	FL	38	T4004	
FINAL DATA	143	17	ODI	36	0.78	M 1	95	9TH TSP -	1.45	FL	38	T4004	
FINAL DATA	143	56	ODI	30	1.84	3	105	7TH TSP +	0.44	FL	37	W6871	
FINAL DATA	144	54	ODI	20	0.70	3	113	10TH TSP-	6.72	FL	39	W6871	
FINAL DATA	145	3	ODI	27	0.51	3	108	14TH TSP+	0.41	FL	40	W6871	
FINAL DATA	145	52	ODI	24	0.95	M 1	105	7TH TSP -	0.05	FL	39	W6871	
FINAL DATA	146	5	ODI	33	2.40	3	103	UTSF -	1.10	FL	40	W6871	
NAL DATA	146	50	ODI	34	0.92	3	102	7TH TSP +	0.92	FL	40	W6871	
NAL DATA	148	13	ODI	21	1.04	M 1	107	9TH TSP +	0.00	FL	41	S4373	
NAL DATA	148	34	ODI	37	0.80	M 1	90	14TH TSP+	0.87	FL	41	B0690	
NAL DATA	149	10	ODI	21	0.76	3	113	6TH TSP +	1.50	FL	42	B0690	
FINAL DATA	149	29	ODI	25	1.11	M 1	108	10TH TSP+	0.00	FL	42	B0690	
AL DATA	149	32	ODI	29	1.01	3	105	14TH TSP+	0.44	FL	42	S4373	
L DATA	150	13	ODI	25	1.22	M 1	105	8TH TSP +	0.10	FL	42	B0690	

TOTAL TUBES FOUND = 168
TOTAL INDICATIONS FOUND = 173
TOTAL TUBES IN INPUT FILE = 15531

** B&W TUBAN(TM) (VER. 3.1)****** Thursday June 7, 1990 02:28 PM **

Plant: OCONEE UNIT 1 Steam Generator: B

Order: Sort by ROW, TUBE

Title: TUBES PLUGGED 5/90 RFO

NO.	ROW	TUBE
1.	9-	36
2.	11-	47
3.	19-	15
4.	20-	54
5.	22-	93
6.	24-	86
7.	25-	88
8.	26-	88
9.	27-	9
10.	29-	88
11.	30-	105
12.	32-	72
13.	35-	73
14.	43-	115
15.	43-	116
16.	44-	118
17.	44-	119
18.	45-	1
19.	50-	119
20.	52-	3
21.	52-	4
22.	61-	125
23.	63-	28
24.	68-	119
25.	69-	4
26.	86-	16
27.	93-	7
28.	94-	2
29.	94-	12
30.	94-	119
31.	95-	128
32.	103-	54
33.	116-	6
34.	116-	105
35.	118-	20
36.	125-	93
37.	128-	20
38.	128-	35
39.	130-	84
40.	131-	82
41.	132-	8
42.	135-	3
43.	136-	3
44.	137-	18
45.	139-	65
46.	140-	3
47.	140-	9
48.	140-	17
49.	145-	52

Babcock & Wilcox
a McDermott company

VOLUMETRIC TEST DATA

CUSTOMER: Duke Power Co. Oconee Unit I	CONTRACT NO.: 702-2034	COMPONENT: Steam Gen. 1B (Vessel)
DESCRIPTION: Steam Gen. 1B (Upper Head To Tube Sheet Pc 8 To 51)		THERMOMETER: OCQA-223
I.D. NO.: 1SGB-WG58-1	PROCEDURE: ISI-130 Rev. 24	MATERIAL: C/S
THICKNESS: 8.5"	TEST SURF.: OD	
NO. POSITIONS: 36	DISTANCE: 12.0"	NO. 1 REFERENCE: 20
BEAM DIRECTION: ☑ LONG ☑ SHEAR	LIMITED EXAM: ☐ NO ☑ YES ?	
EXAMINER: GJ Moss / D.L. Robinson	I.D. NO.: M-8250 / R-9615	LEVEL: II
EXAMINER: J W Sitzer / [illegible]	I.D. NO.: B9449 / S-5643	LEVEL: II

CAL. SHEET: 901023	CAL. SHEET: 901010	CAL. SHEET: 901011	CAL. SHEET:
ANGLE: 0	ANGLE: 45	ANGLE: 60	ANGLE:
TIME START: 1242 HR.	TIME START: 1830 HR.	TIME START: 1230 HR.	TIME START: N/A HR.
TIME STOP: 1457 HR.	TIME STOP: 2020 HR.	TIME STOP: 1830 HR.	TIME STOP: HR.
PART TEMP.: 88 °F	PART TEMP.: 88 °F	PART TEMP.: 88 °F	PART TEMP.: °F
DATE: 5-6-90	DATE: 5-6-90	DATE: 5-6-90	DATE:

NOTES: INDICATION 200 MEAS. TAKEN FROM TUBE SHT TAPER
#1 REF. STARTS AT X-AXIS
old data states W-Axis
No MAX TWD DIMENSION WAS OBTAINABLE DUE to THE GEOMETRY WHERE THE HEAD RADIUS STARTS (402) ONLY

1ST SCAN	N/A	60° REQUIRED ✓
2ND SCAN		60° NOT REQUIRED

CAL. BLK: 40305
DWG. NO.: OM-201-1893 / ISI-OCN1-004
FCA(S): CAT. 89.006

WELD INFORMATION & 0° THICKNESS

SURFACE NO. 2			SURFACE NO. 1
Tube Sheet	HTH: Flush		Upper Head
BM: N/A	WD: 4.0"		BM: 9.045
HAZ: N/A	℄: 8.44		HAZ: 8.743
	MIN: 8.3	MAX: 8.6	

INDICATION NO(S)	POSITION OR PART ITEM A	B	ANGLE (DEGREES)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX. AMP. %DAC	LAM. DEPTH (INS)	LGTH 20%	WDTH 50%/HMA	100%	CRYSTAL DISTANCE FROM (INCHES) A	B	1	2	THROUGH WALL DIMENSION MINIMUM DEPTH	MIN POSITION (INCHES) 1 A	2 B	MAXIMUM DEPTH	MAX POSITION (INCHES) 1 A	2 B	DAMPS	REMARKS
	360°		0°			No	Recordable			Indications													
200	27 to 28		45°	1	2	Sep.	282	7.437		6.1			5.4		10.75	7.135		10.15	7.638		11.2	No	
							50	7.437					1.6		10.5								50% EP
							50	7.337					7.7		10.5								50% EP
							224	7.235					4.5		10.3	7.135		10.0	7.738		11.0	No	
							224	7.537					3.6		10.6	7.135		9.9	7.737		10.8	No	
							125	7.235					2.7		10.5	7.235		10.2	7.738		11.0	No	
							50	7.235					1.8		10.5	7.135		10.0	7.638		11.0	No	
							125	7.538					6.3		10.5	7.135		10.0	7.537		10.9	No	
							50	7.336					7.2		10.5	7.135		10.2	7.537		11.0	No	
	360°		45°			No	Other		Recordable	Indications													

Reevaluated per [illegible] HSB 6-4-90

REVIEWED BY: Howard Stoppelmann			LEVEL: II	DATE: 8 MAY '90	FIGURE NO.: B02.040.003
ANGLE	0 DEG.	45 DEG.	60 DEG.	OTHER	E.R. REQUIRED: ☑ YES ☐ NO — E.R. NUMBER: 901-002
IND. NOS.	1 TO 199	200 TO 399	400 TO 599	600 TO 799	

PAGE 1 OF 8

BABCOCK & WILCOX

VOLUMETRIC TEST DATA FORM 101

BWNP-20531-3 (10-84)

CUSTOMER: DUKE POWER CO. OCONEE I | CONTRACT NO: 702-2034 | COMPONENT: VESSEL SGB

EXAMINER: J.W. Setzer | ID# S-5643 | LEVEL II | DATE(S): 5-6-90

EXAMINER: G.Bibb | ID# B-9449 | LEVEL II

IND. NO.	POSITION OR PART ITEM	ANGLE (DEG)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX AMP % DAC	LAM. DEPTH (IN.)	LNGTH 20%	WDTH 50% OR HMA	WDTH 100%	(INCHES) CRYSTAL DISTANCE FROM A	B	1	2	THROUGH WALL DIMENSION MINIMUM DEPTH	MIN POSITION IN. 1 A	MIN POSITION IN. 2 B	MAXIMUM DEPTH	MAX POSITION IN. 1 A	MAX POSITION IN. 2 B	DAMPS	REMARKS
400	25 to 27	60	1	2	SEP	125	7.3		1.0			12.0		12.6	7.1		12.0	7.5		13.1	NO	
						50	7.4					11.6										
						50	7.3					12.6										
401	20 to 21	60	1	2	SEP	80	7.1		1.5			2.5		12.0	6.9		11.5	7.2		12.1	NO	
						50	7.1					2.0										
						50	7.1					3.5										
402	27 to 28	60	1	2	SEP	251	6.8		4.4			5.1		13.2	6.6		12.9				NO	
						50	6.8					2.8		13.2								
						50	6.8					7.2		13.2								
						251	6.8					3.7		13.2	6.6		12.9					SEE NOTES
						251	6.8					4.6		13.2	6.6		12.9					
						260	6.8					5.5		13.2	6.6		12.9					
						159	6.8					6.4		13.2	6.6		12.9					
	360°	60		NO	OTHER RECORDABLE INDICATIONS																	

REVIEWED BY: Howard Stoppelman | LEVEL: II | DATE REVIEWED: 8 MAY '90 | FIGURE NO.: B02-040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: 1
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: 1SGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☑ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☑ 2 ☑ A ☐ B
BETWEEN POINTS 3 AND 5 . 8.5 INCHES FROM POINT 3 TO 8.5
INCHES FROM POINT 5 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scub in Shipping Tie Down Removal Area

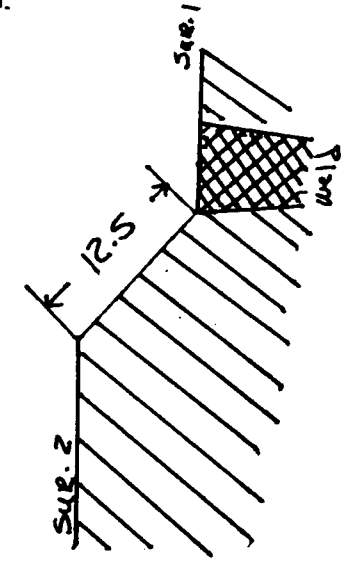
☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS ____ AND ____ . ____ INCHES FROM POINT ____ TO ____
INCHES FROM POINT ____ . ____ INCHES FROM WELL ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☑ 2 — BEAM DIRECTION ☑ 1 ☐ 2 ☑ A ☑ B
360 DEGREES. 3.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Taper on Tube sheet Area

☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:



SEE ATTACHMENT NO(S).: ____

REVIEWED BY: Howard Hoppelman LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: 1SGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☑ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 34 . 0.0 INCHES FROM POINT 33 TO 2.0
INCHES FROM POINT 34 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scub in shipping tie Down Removal Area

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☑ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 35 AND 3 . 5.0 INCHES FROM POINT 35 TO 5.0
INCHES FROM POINT 3 . 19.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: MANWAY

☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

NOTES:

SKETCH:

SEE ATTACHMENT NO(S): _____

REVIEWED BY: Howard Stoppelman LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN

SURFACE ☐ 1 ☑ 2

BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B

BETWEEN POINTS 26 AND 30 . 6 INCHES FROM POINT 26 TO 6

INCHES FROM POINT 30 . 15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND

ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A

DUE TO: Support Pad

☑ NO SCAN
☐ LIMITED SCAN

SURFACE ☐ 1 ☑ 2

BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B

BETWEEN POINTS 4 AND 5 . 3.5 INCHES FROM POINT 4 TO 6.5

INCHES FROM POINT 5 . 8.5 INCHES FROM WELD ℄ TO 11.5 INCHES FROM WELD ℄

ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A

DUE TO: 1 1/2" ø VENT CONN.

~~☐ NO SCAN~~
☐ LIMITED SCAN

SURFACE ☐ 1 ☐ 2

BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B

__ DEGREES. __ INCHES FROM WELD ℄ TO __ INCHES FROM WELD ℄

N/A

ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A

DUE TO:

~~☐ NO SCAN~~
☐ LIMITED SCAN

SURFACE ☐ 1 ☐ 2

BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B

__ DEGREES. __ INCHES FROM WELD ℄ TO __ INCHES FROM WELD ℄

N/A

ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A

DUE TO:

NOTES:

SKETCH:

SEE ATTACHMENT NO(S).:

REVIEWED BY: Howard Hogaboom, LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 5B-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☑ 2 — BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 12 AND 16.6 INCHES FROM POINT 12 TO 6
INCHES FROM POINT 16.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☑ 2 — BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 19 AND 23.6 INCHES FROM POINT 19 TO 6
INCHES FROM POINT 23.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

~~☐ NO SCAN~~ ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO N/A INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~ ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO N/A INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES:

SKETCH:

SEE ATTACHMENT NO(S): ____

REVIEWED BY: Howard Hoggard LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: SG B, I.D. NO.: 1SGB-WG58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 2 . 7 INCHES FROM POINT 33 TO 6
INCHES FROM POINT 2 . 15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND.
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 5 AND 9 . 6 INCHES FROM POINT 5 TO 6
INCHES FROM POINT 9 . 15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄ n/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄ n/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:

SEE ATTACHMENT NO(S).: ____

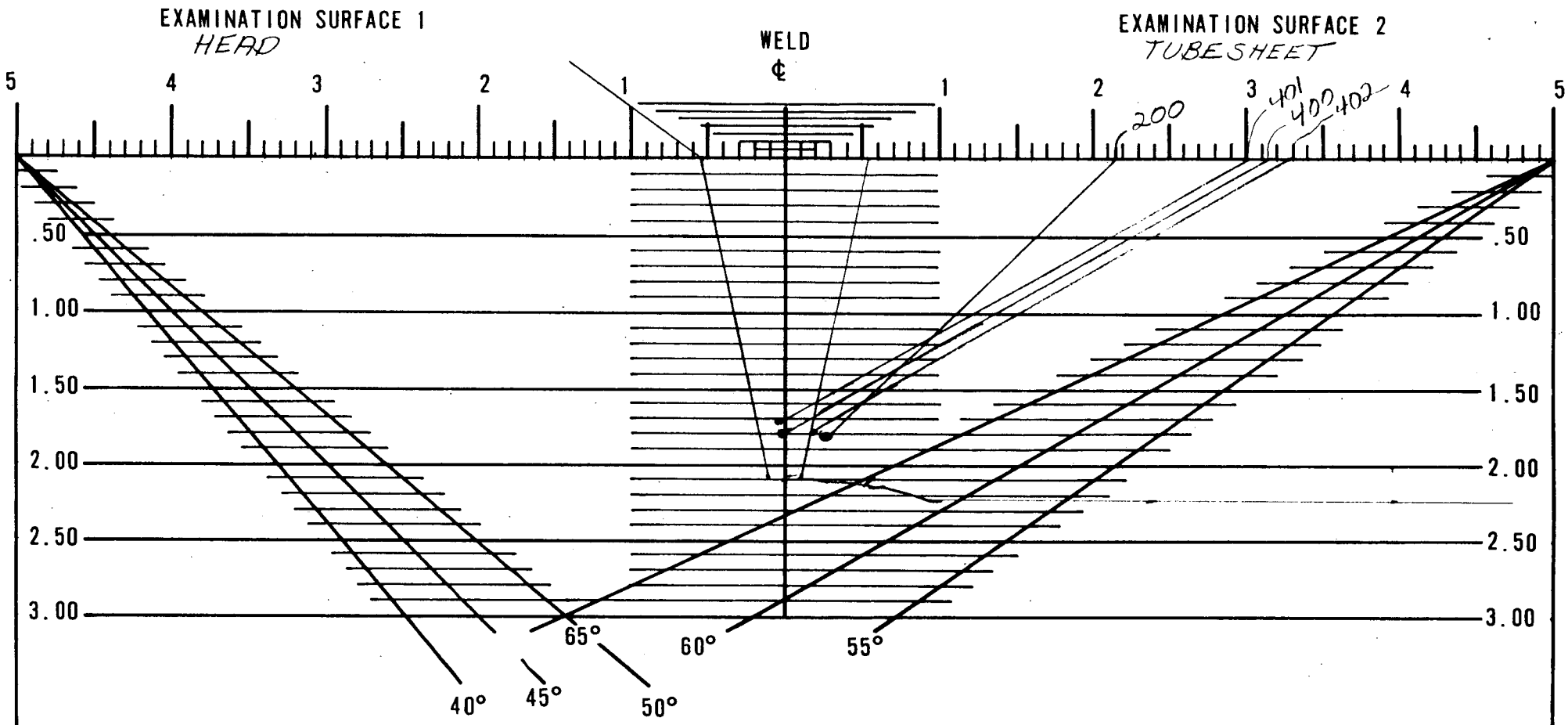
REVIEWED BY: Howard Stiegelmeyer LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

BABCOCK & WILCOX
UTILITY F GENERATION DIVISION

BWNP 2 1(5-83)

INDICATION PLOT SHEET

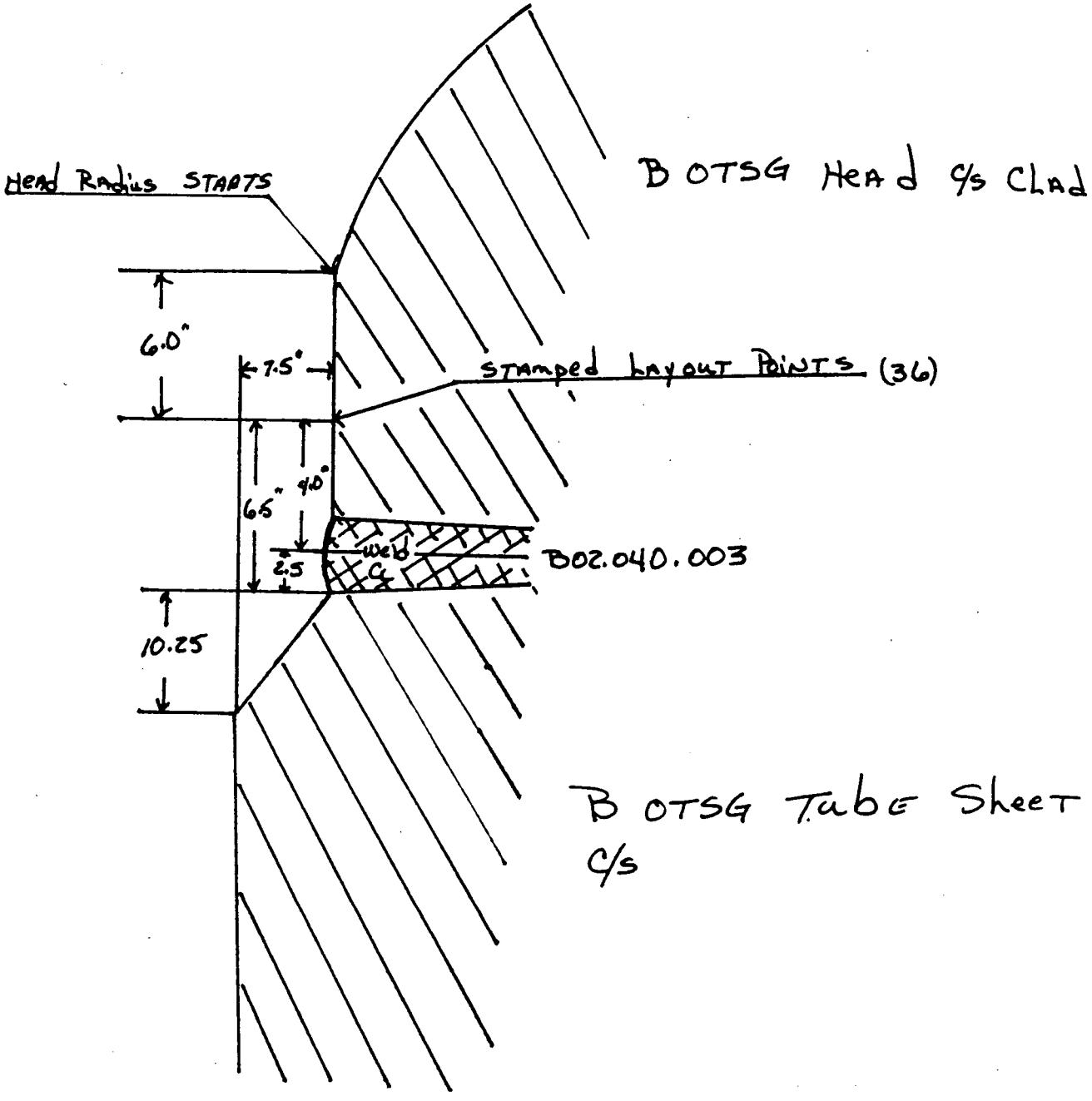


COMMENTS:

☐ GEOMETRIC ☐ REPORTABLE

CUSTOMER:	DUKE POWER CO OCONEE 1
PROJECT NO:	702-2034
WELD NO:	1SGB-WG-58-1
ANALYST:	
SNT LEVEL:	
DATE:	
FIGURE NO:	B02.040.023

ATTACHMENT TO B02.040.003



D. C. Robinson

5-7-90

26428 (R6-88)

FORM QCL-14A	REVISION 7

DUKE POWER COMPANY

PROJECT OCONEE UNIT 1

ISI VISUAL EXAMINATION VT-3 AND VT-4 HANGERS

SM 1012

W.R. # / NSM N/A	☐ PSI ☑ ISI

INSPECTOR	LEVEL	DATE 5-3-90	PROCEDURE QCL-14 REV. 9
P. S. Eberhart	II	ACTUAL SYSTEM TEMPERATURE N/A	VISUAL METHOD: ☑ DIRECT ☐ REMOTE
W.C. Land	II	SYSTEM STATUS HOT ☐ COLD ☑ OTHER ☐ (EXPLAIN IN COMMENTS)	VISUAL AIDS/M&TE S/N: FLASHLIGHT MIRROR TAPE

S/R NUMBER	REV.	I.D. NUMBER	ITEM NUMBER
1-51A-0-479A-H7A	D2	1-51A-H7A	F1.01.083

RESULTS: ☐ ACCEPTABLE ☑ UNACCEPTABLE, (REQUIRES NDE, EVALUATION OR REPAIR)

IND. NO.	INDICATION TYPE	LENGTH	WIDTH	REMARKS
1			"	U-BOLT IS MISSING FROM HANGER

MECHANICAL SHOCK SUPPRESSOR	A	B
HOT SETTING		
COLD SETTING	N/A	N/A
ACTUAL PISTON SETTING		

MECHANICAL SHOCK SUPPRESSOR	C	D
HOT SETTING		
COLD SETTING	N/A	N/A
ACTUAL PISTON SETTING		

VARIABLE SPRING SUPPORTS	A	B
HOT LOAD		
COLD LOAD	N/A	N/A
LOAD IND. READING		

HYDRAULIC SHOCK SUPPRESSOR	A	B
FLUID LEVEL		
HOT SETTING	N/A	N/A
COLD SETTING		
ACTUAL PISTON SETTING		

CONSTANT SUPPORT	A	B
HOT LOAD		
COLD LOAD	N/A	N/A
POSITION IND. READING		
TOTAL NO. OF DIV. SCALE		

COMMENTS DISPOSITION

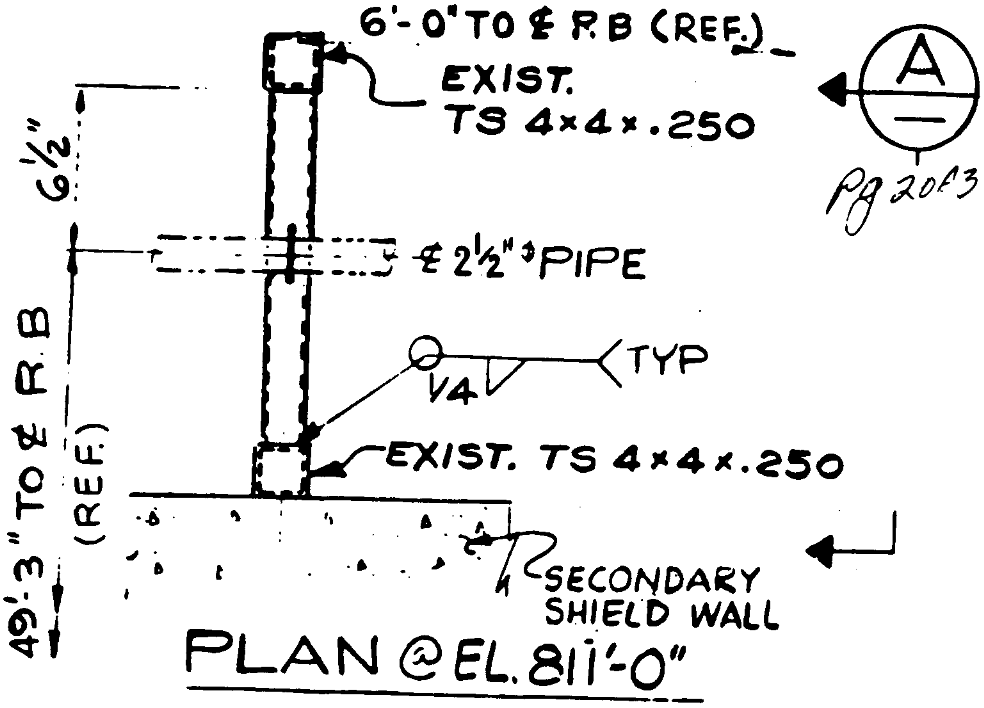
N/A

PIR: ☑ YES ☑ NO SERIAL NO. N/A 1-040-0046

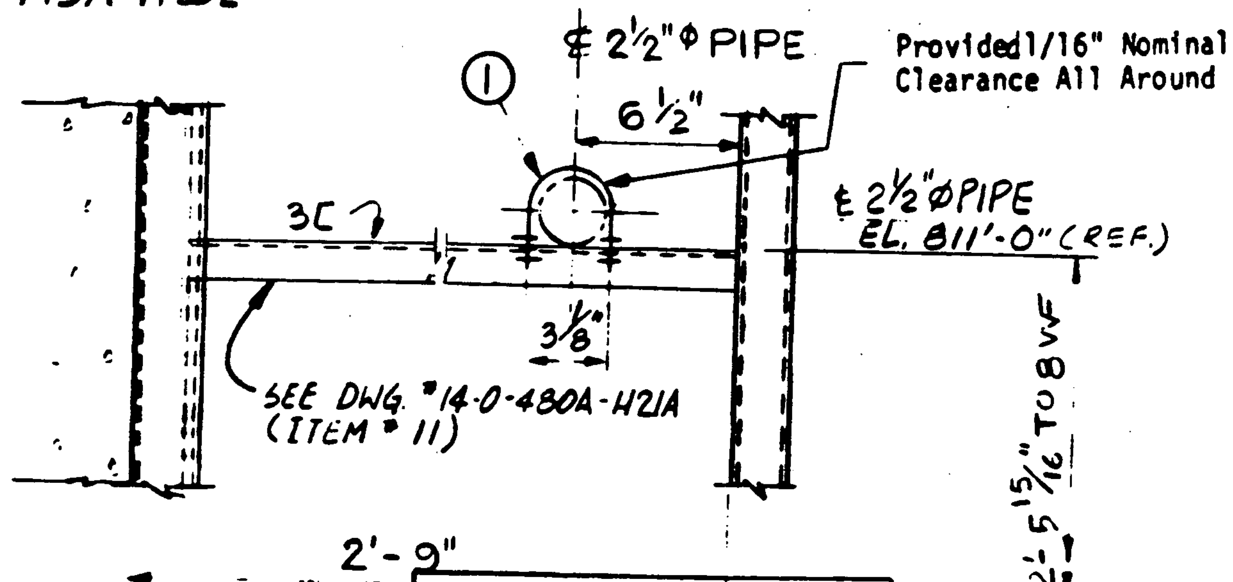
QA REVIEW T. J. Coleman	DATE 5-29-90

ANII REVIEW R. F. Elgin ANII/ANIII	DATE 5-29-90

NOTE
WORK THIS DWG
W/HANGER NO'S:
14-0-480A-H21A
14-0-480A-H21B
14-0-480A-H21C
14-0-480A-H21D
14-0-480A-H21E
14-0-480A-H21F
51A-0-479A-H19C
51A-0-479A-H19E



PLAN @ EL. 811'-0"



S/R Calc. # OSC-13004.07 D2

FOR INFORMATION ONLY

ELEVATION A

QA CONDITION 1

FOR INSERVICE INSPECTION USE ONLY

F1.01.083 1-51A-H7A

REV.	DATE	REVISIONS	BY	DATE	CH'K	DATE	APPR	DATE
D2		As Built Per IEB 79-14 Impl. Date: 3-29-89	RH.	5-17-89	PLC	6-26-89	BJC	6-26-89
△		REVISED PER IEB 79-14		9-10-81		6-10-81	DLR	
△	3-30-81	REVISED & REDRAWN PER IEB 79-14	SBM					

DUKE POWER CO.
Oconee Nuclear Station

Iso. Drawing No.	Item No.	Unit No.
1-RB-15115-01	99	1

GAITHERSBURG

REF. DWGS. STRESS ISO 0-492B-2(5)
COMPOSITE 0-479A
CIVIL 0-65 B

PIPE SUPPORTS
H.P. INJECTION SYS. EAST COOLANT LOOP-NORTH LEG

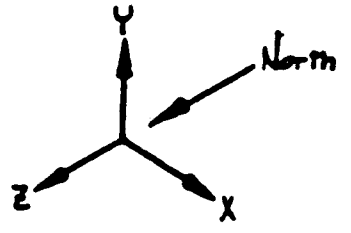
JOB. NO.	HANGER NO.	REV.
13312-002	51A-0-479A-H7A SHT. 1 OF 2	D2

ITEM NO.	QUANTITY	SIZE	DESCRIPTION	ASTM	LOT NUMBER	BY
1	1	2" x 2½"	FIG. 137 U-BOLT		294-1017F	H.C.

Ag 3043

SUPPORT DATA	"X" RIGID	"Y" RIGID
T (THERMAL LOAD)	5	-5
D (DEAD LOAD)		-98
DE (OBE)	61	16
MHE (SSE) (DBE)	122	32
DE+T+D	+78/-61	+0/-119
MHE+T+D	+138/-122	+0/-135

MVMTS."	X	Y	Z
THERMAL	—	—	.219
DBE SEISMIC	.001	—	.150

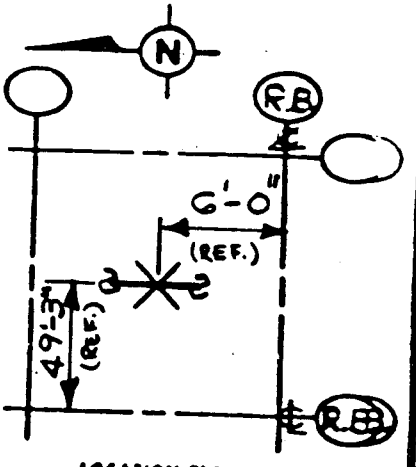


PROBLEM NO. 1-51-15 SYSTEM NO. 51A

ISSUE 0

DATA PT. 345 NUCLEAR CLASS —

This Drawing Supersedes Bechtel Dwg. No. N/A Rev. — Date —



LOCATION PLAN

DUKE POWER COMPANY

PROJECT OCONEE NUCLEAR STA. UNIT 1

QA CONDITION 1

SHEET NO. 2 OF 2 REV. D2

MARK NO 51A-0-479A-H7A

SERIAL NO. SN/012

SUPPORT NO. 1-51A-0-479A-H1A

Attachment to Form QCL-14A

QA ITEM NO. F1.01.083

Design Engineering Comments/Disposition:

Design Engineering Review has found this support to be unacceptable for service as a lateral pipe restraint. However, further evaluation has verified that the pipe system is acceptable for service as found. A PIR will be written and additional samples will be performed as required by Q.A. per ASME Code (Winter 1980), Sect. II, Subsection IWF2430(A). The support sketch will be revised to reflect the existing condition.

Approved by: S J Cerny

Date: 5/15/90

6.0 Class 2 Inspection Results

Inspections were performed during Outage 12 on Steam Generator 1B, piping integrally-welded attachments, piping welds of Low Pressure Injection, Reactor Building Spray and High Pressure Injection Systems, Main Steam Valve, and supports.

6.1 Steam Generators

Steam Generator 1B Shell to Shell Weld received an ultrasonic examination. No reportable indications were found.

6.2 Piping

Welds one-half inch and less nominal wall thickness:

Nineteen (19) circumferential welds and two (2) longitudinal welds received a dye penetrant examination. No reportable indications were found.

One (1) pipe branch circumferential weld received a dye penetrant examination. No reportable indications were found.

Piping integrally-welded attachments:

Two (2) attachments of the Main Steam System and one (1) attachment of the Main Feedwater System received a magnetic particle examination. An alternate examination was performed on one (1) attachment of the Main Feedwater System (see Section 7 of this report). Three (3) attachments of the Low Pressure Injection System and two (2) attachments of the Reactor Building Spray System received a dye penetrant examination. No reportable indications were found.

6.3 Valves

Main Steam Turbine Stop Valve SV1 Head-to-Body Studs received an ultrasonic examination in place. The examination was performed from the top of the studs to the last two (2) threads engaged in the valve body (refer to Request for Relief ONS-009, NPD Licensing Serial No. 89-04, included in Section 10 of this report). No reportable indications were found.

6.4 Component Supports

Forty-one (41) Class 2 Component Supports received a visual examination as required by ASME Section XI, Article IWF-2000. No reportable conditions were found.

6.5 System or Component Functional Test

A Class 2 Functional Test was performed as required by ASME Section XI, Article IWC-5000. No reportable conditions were found.

6.6 Class 2 Repairs and Replacements

Repairs and replacements for work performed from February 14, 1989 to June 4, 1990 are itemized in Section 11 of this report.

7.0 Augmented Inspection and Alternate Examination Results

Augumented inspections were performed on Reactor Coolant Pump 1B2 Flywheel.

An alternate examination was performed on a Main Feedwater Integrally-Welded Attachment.

7.1 Reactor Coolant Pump Flywheel

Reactor Coolant Pump 1B2 Flywheel received an ultrasonic and a magnetic particle baseline examination. No reportable indications were found.

7.2 Alternate Examination

Main Feedwater Integrally-Welded Attachment (for Support No. 03-0-480A-H9B), Item No. C03.040.038, received a visual examination in lieu of the applicable surface examination specified in ASME Section XI Table IWC-2500-1 Category C-C, due to the physical location of the attachment. In compliance with the Inservice Inspection Program, Request for Relief ONS-013 was submitted to the NRC. A copy of the relief is included in Section 10, and a copy of the inspection data sheet is included in this section of the report.

No reportable conditions were found during the visual examination.

OCONEE ENGINEERING DIVISION
CIVIL ENGINEERING SECTION

26428 (R4-90)

FORM QAL-14A | REVISION 8

RECEIVED
MAY 2 4 1990
DIVISION/CENTRAL RECORDS

DUKE POWER COMPANY

PAGE 1 OF 3

PROJECT Oconee UNIT 1

File No.:

ISI VISUAL EXAMINATION VT-3 AND VT-4 HANGERS SN/028

WR # / NSM N/A ☐ PSI ☐ ISI

INSPECTOR	LEVEL	DATE	PROCEDURE	REV.
P.S. Eberhart/TJC	II	5-23-90	QAL-14	10
W.L. Trout	II	ACTUAL SYSTEM TEMPERATURE: N/A	VISUAL METHOD: ☑ DIRECT ☐ REMOTE	
		SYSTEM STATUS: HOT ☐ COLD ☑ OTHER ☐ (EXPLAIN IN COMMENTS)	VISUAL AIDS/M&TE SN: Flashlight - Mirror	

S/R NUMBER	REV.	I.D. NUMBER	ITEM NUMBER
1-03-0-480A-H9B	01	1-03-H9B	CO3-040-038-HT

RESULTS: ☐ ACCEPTABLE ☑ UNACCEPTABLE, (REQUIRES NDE, EVALUATION OR REPAIR)

IND. NO	INDICATION TYPE	LENGTH	WIDTH	REMARKS
1	Undercut		1/32 To 3/32	Some welds have undercut the entire length others vary from 1/4" to 1" long See Attached.

MECHANICAL SHOCK SUPPRESSOR

	A	B
HOT SETTING		
COLD SETTING	N/A	
ACTUAL PISTON SETTING		

MECHANICAL SHOCK SUPPRESSOR

	C	D
HOT SETTING		
COLD SETTING	N/A	
ACTUAL PISTON SETTING		

VARIABLE SPRING SUPPORTS

	A	B
HOT LOAD		
COLD LOAD	N/A	
LOAD IND. READING		

HYDRAULIC SHOCK SUPPRESSOR

	A	B
FLUID LEVEL		
HOT SETTING	N/A	
COLD SETTING		
ACTUAL PISTON SETTING		

CONSTANT SUPPORT

	A	B
HOT LOAD		
COLD LOAD	N/A	
POSITION IND. READING		
TOTAL NO. OF DIV. SCALE		

COMMENTS/DISPOSITION: undercut present on Attachments 1 Item 12 as noted above TJC 5-23-90

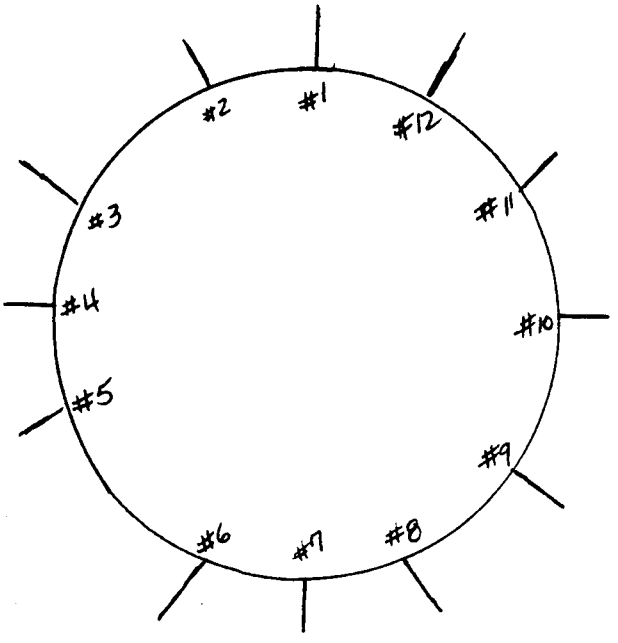
PIR: ☐ YES ☑ NO SERIAL NO.: N/A

QA REVIEW	DATE	ANII REVIEW	DATE
T.J. Coleman	5-30-90	R F Elgin ANII 4+II	5-30-90

#1 THRU #5 - 1/4" FILLET WELD BOTH SIDES
#6 - 3/16" FILLET WELD BOTH SIDES
#7 - 1/8" to 3/16" FILLET WELD BOTH SIDES
#8 - (A) 1/8" (B) NO WELD *
#9 THRU #11 - WELD IS PRESENT
#12 - (A) 1/8" (B) 1/4" *

* A - 1ST SIDE OF LUG ENCOUNTERED GOING CCW FROM #1
B - 2ND SIDE "

1-03-0-480A-H9B
REV. D1



LKG. SOUTH

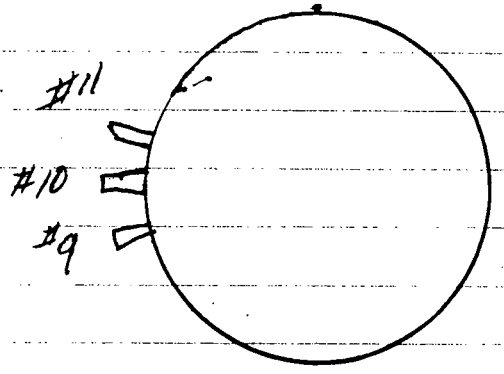
DIMENSIONS GIVEN ARE NOT MEASUREMENTS - THEY ARE THE RESULTS OF A VISUAL INSPECTION USING A MIRROR AND A FLASLIGHT. THIS INSPECTION WAS DONE WHILE WEARING A PARTICULATE MASK, MAKING IT VIRTUALLY IMPOSSIBLE TO SEE #'s 9-11.

PSE 5-22-90

#9 Top weld has ¼" partial Penetration weld with 1/32" undercut 1" in and 1/32 undercut ¾" Long in Center of the weld. Bottom weld is 3/16" P.P. entire length with no undercut.

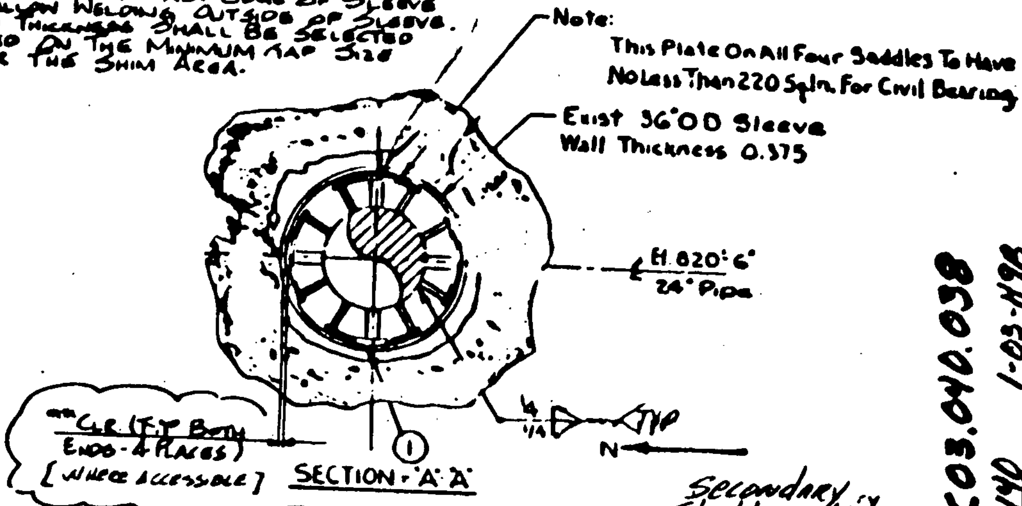
#10 Top weld is 5/16" P.P. ¾" iron weld there is 1/32" undercut ¼" long. Bottom weld is 3/16" P.P. entire length with no undercut.

#11 Top weld is 5/16" P.P. entire length of Bottom weld is 5/16" P.P. entire length 1/16" low entire length.

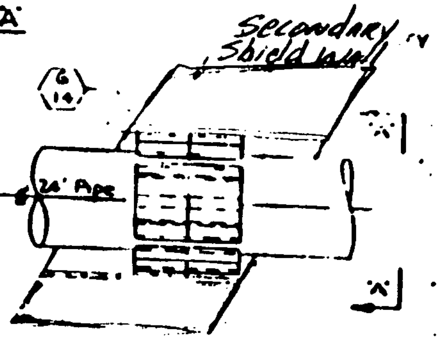


LKG North

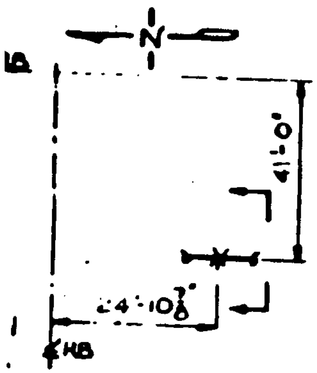
SHIM IF REQUIRED PER SECTION 7.7.0 OF OS-0929.00-00-0002 EXCEPT SHIMS ARE TO EXTEND AS A MINIMUM THE FULL ARC LENGTH OF THE SADDLE AND HAVE A MINIMUM WIDTH OF 5". SHIM MAY EXTEND 4" PAST EDGE OF SLEEVE TO ALLOW WELDING OUTSIDE OF SLEEVE. SHIM THICKNESS SHALL BE SELECTED BASED ON THE MINIMUM GAP SIZE OVER THE SHIM AREA.



SECTION - "A"-"A"



PLAN



LOCATION PLAN

* LOADS WITH FEEDWATER HEADER SUPPORTS

FOR INSERVICE INSPECTION USE ONLY

C03.040.038 1-03-H98

F102.140 WEST Side 2nd Lvl

8-28

QUAN.	MATERIALS AND OPERATIONS	ITEM NO.
O.T.	PIPE GUIDE CONSISTING OF:	
4	Saddle/sk, See Detail 'A' TV-2364	
1	Pipe Clamp & Tee	1
	REF: 03-0-480A-H98	
	[illegible] TO ABOVE MAT'L.	

S/R CALC. NO. OSC-1297-07

FOR INFORMATION ONLY

"X" RIGID

[illegible]	X	Y	Z
THERMAL / SSE SEISMIC	.000 / .000	.000 / .000	-.814 / .639

PROBLEM NO. 1-03-05 SYSTEM NO. 03

ISSUE 0

DATA PT. 370 NUCLEAR CLASS

FOR INSERVICE INSPECTION USE ONLY

NOTE: THIS DRAWING SUPERSEDES BECHTEL SKETCH O-4903-17 REV. D, DATED 7-17-70

F102.140 1-03-H98

QA CONDITION 1

SYSTEM DATA			
RATING	A	T (Thermal Load)	-7672
PRESSURE	1050 PSIG	D (Dead Load)	-1039
TEMPERATURE	600° F	DE (OBE)	± 16341
[illegible]	[illegible]	MHE (SSE)	± 32682
	24" Sch 80, 106-Gr.B	DE + T + D	+15368 / -25118
[illegible]	3"	MHE + T + D	+31709 / -41459

15312-002

DUKE POWER CO.

OCONEE NUCLEAR POWER STATION - UNITS 1, 2, & 3

PIPING SUPPORT DETAIL

03-0-480A-H98

DRN.	HLU	4/15/81	CHKD.	DT	4-21-81
INSP.	[illegible]	5/4/81	APPR.	[illegible]	5/4/81
SCALE: NONE		SHT. 1 OF 9		REV.	D1

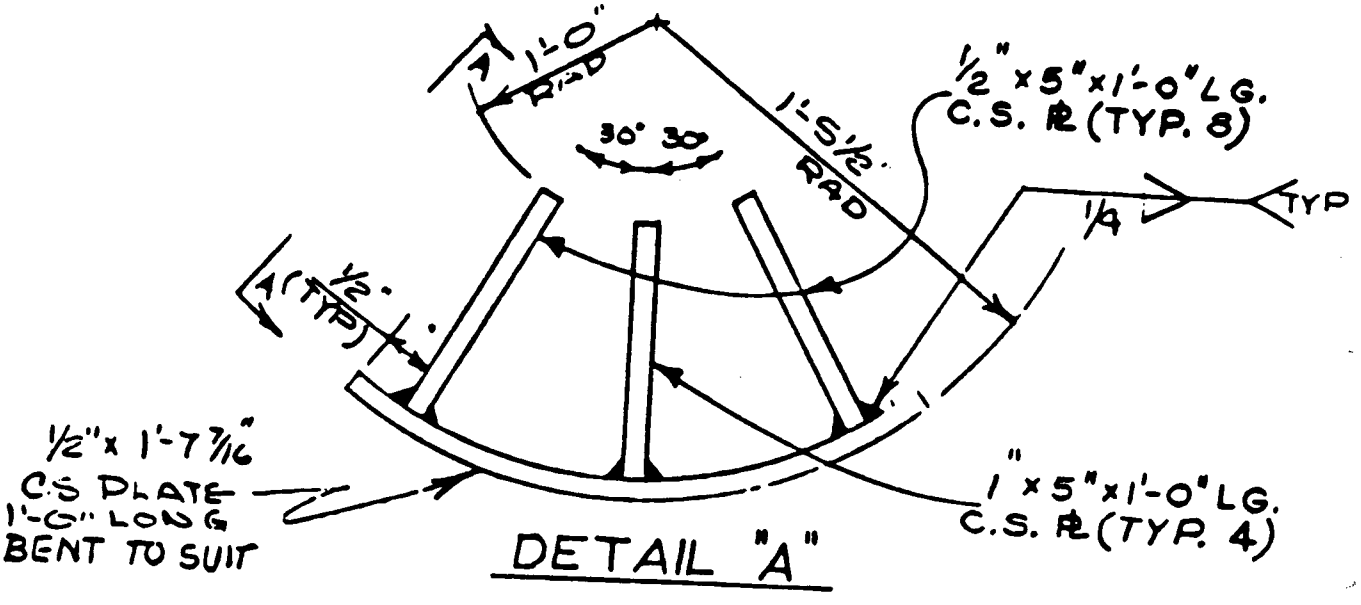
NO.	REVISION	BY	CHKD	APPR	DATE
D1	[illegible]				4-17-81
2	Revised Per IGA 73-14				

CUSTOMER DUKE POWER CO.

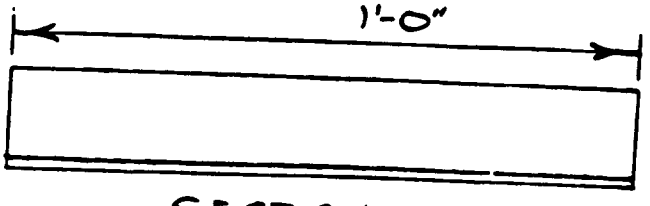
ORDER OR CONT. No. 57-HDW-1678

JOB NAME OCONEE NUC. STA. UNIT # 1

This drawing supersedes Grinnell Sketch No. O-4908-17A Rev. 0 Dated 6/19/70



DETAIL "A"



SECTION A-A

FOUR (4) REQ'D.

ITEM NO.	MATERIALS AND OPERATIONS	QUAN.	SHIP
1.	Plate assembly as detailed above, TW-236 #	4	

FOR INFORMATION ONLY

FOR INSERVICE INSPECTION USE ONLY

F. DRW'G. Nos. PIPE ____ STEEL ____ MARK No. 03-0-480A-H9B SHT. 2 OF 3 REV. D1

ITEM NO	NO REQD	PART NO	SIZE	DESCRIPTION	MATERIAL

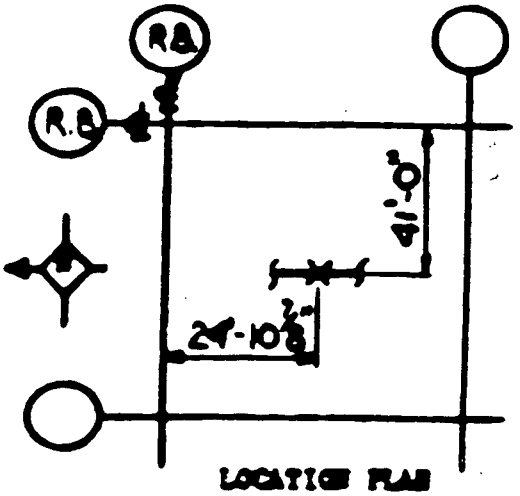
"Y" RIGID

FOR INFORMATION ONLY

FOR INSERVICE INSPECTION USE ONLY

SUPPORT DATA	
T (THERMAL LOAD)	21699
D (DEAD LOAD)	-6874
DE (OBE)	* 11949
MHE (SSE)	* 23897
DE+T+D	+27148/-19197
MHE+T+D	+39096/-31145

LOADS. #	X	Y	Z
THERMAL	.000	.000	-.814
SSE SEISMIC	.000	.000	.639



LOCATION PLAN

PROBLEM NO. 1-03-05 SYSTEM NO. 03

ISSUE 0

DATA PT. 370 NUCLEAR CLASS

JUL 03

MASTER FILE

* LOADS WITH FEEDWATER HEADER SUPPORTS
** LOADS WITHOUT FEEDWATER HEADER SUPPORTS

QA CONDITION 1

REV.	DATE	REVISIONS	BY	CHK	SUPV	ENG	QA
2							
1A	-	SEE SHT. 1 OF 3	-	-	-	-	-
1	11/5/80	REVISED PER IEB 79-14				N/A	N/A

DUKE POWER CO.
Oconee Nuclear Station

Iso. Drawing No.	Item No.	Unit No.
O-490B-3	2	1

GAITHERSBURG

STRESS ISO O-490B-3(S)

REP. COMPOSITE

CIVIL

PIPE SUPPORTS

MAIN FEEDWATER SYS.
WEST GENERATOR

JOB NO.	HANGER NO.	RE
13312-002	03-O-480A-H9B SHEET 3 OF 3	DI

SERIAL NO. SN/028

SUPPORT NO. 1-03-0-480A-H9B

Attachment to Form QCL-14A

QA ITEM NO. C03.040.038-VT

Design Engineering Comments/Disposition:

Design Engineering review has found this support to be acceptable for service. The support sketch will be revised to reflect the existing conditions. Also, reference QA Item Number F1.02.140

Approved by: S S Ceres

Date: 5/24/90

8.0 Personnel, Equipment and Material Certifications

All personnel who performed or evaluated the results of inservice inspections from February 13, 1990 to June 4, 1990 at Oconee 1 were certified in accordance with the requirements of 1980 Edition of ASME Section XI with Addenda through Winter 1980. The appropriate certification records for each Duke Power Company inspector is on file at Oconee Nuclear Station or in the Corporate Offices in Charlotte, North Carolina. The certification records for the Babcock & Wilcox inspectors are on file at the Babcock & Wilcox Offices in Lynchburg, Virginia.

Records of periodic calibration of Babcock & Wilcox inspection equipment are on file at the Babcock and Wilcox Offices in Lynchburg, Virginia. Records of periodic calibration of Duke Power Company inspection equipment are on file at Oconee Nuclear Station or in the Corporate Offices in Charlotte, North Carolina.

9.0 Problem Investigation Reports

A copy of each Problem Investigation Report resulting from reportable items, originated against scheduled inservice inspections performed during Outage 12, is included in this section. All were resolved and found acceptable by Duke Power's Quality Assurance Department before returning Unit 1 to service. The following Problem Investigation Reports were issued:

P.I.R. NO.	DESCRIPTION	DATE ISSUED
1-090-0046	Class 1 Component Support 1-51A-0-479A-H7A	05-15-90
1-090-0052	Steam Generator 1B Upper Head to Tubesheet Weld (Item No. B02.04.003)	05-22-90

Form 35372 (R6-89)

INFORMATION ONLY

COMPLETE FORM BY PRINTING WITH BLACK BALL POINT PEN OR TYPE

DUKE POWER COMPANY
NUCLEAR STATION

Problem Investigation Report Serial No. 1-090-0046
Station Oconee
Licensee Event Report No.

I. Problem Occurred-Time/Date: Unknown Discovered-Time/Date: 5-15-90
Unit(s): 2 Unit Status At Time Problem Occurred/Discovered: Refueling Outage
Description and Cause of Problem: During ISI visual examination of Hanger 1-51A-0-479A-H7A Rev D2 (Item # F1.01.083) it was discovered that the U-Bolt (Item [illegible]) was missing from hanger. This discrepancie was determined by Design Engineering to be unacceptable for service.

Other Duke Stations Affected ☐ Yes ☒ No Determined By/Date: T.J. Coleman / 5-15-90
Comments:

Location of Problem: RX Bldg
Method Used to Discover Problem: This Report
Immediate Corrective Actions Taken/To Be Taken:

Work Stoppage Notification (Form QCK-2A) Serial No.: N/A
Information Sources/References (Work Requests, Documents Violated, etc.): QA514, QAL-14

Originated By: T.J. Coleman Date: 5-15-90 Dept./Group/Section: QA

II. **Compliance Evaluation**-Item/System Operable ☒ Yes ☐ No ☐ Not Applicable
Evaluated By/Date: Rick Matheson 5/22/90 Comments: Determined by Design
Reportable ☐ Yes ☒ No Reportable Per: ☐ 50.73 Section ☐ 50.72 Section
☐ 73.71 Section ☐ T.S./Lic Cond Section ☐ Part 21 ☐ Other: ☐ Part 50.9
Evaluated By/Date: Rick Matheson 5/22/90 Comments: * Determined after Operability

III. Telecon/ENS Report to NRC Time/Date:
NRC Contactee(s): DPC Contactor(s):
Telegraph/Mailgram/Facsimile Transmission to NRC-Date:
Date Notified: NRC Res. Inspector: Station Manager:
General Office: Comments:

IV. Investigation Assigned To: NRC Report Due Date:
Date Due to Compliance after Evaluation:
PIR Review (Compliance): Date:
PIR Station Manager Approval: Date:

V. Further Action/Evaluation Required ☒ Yes ☐ No (Explain Below):
Page 2 Assigned To: Design
Comments:

Compliance Review: Rick Matheson Date: 5/23/90 QA Review: T.J. Coleman Date: 5-22-90
RSM 5/15/90

Distribution

			B. Dobson	C. Boyd	M. Sies	L. Firebaugh	QA Tech Serv.
Initial	Originator	Supt (4)	J. McClure	B. Barron	Russ Childs	J. Tucker	R. Henderson
5-15-90	T.J. Coleman	H. Lowery	P. Skinner	O.J. Dilstrap	M. Carter	R. Elgin	P. Guill
Final	Originator	Supt (4)	J. McClure	B. Barron	M. Carter	J. Tucker	R. Henderson
5-24-90	T.J. Coleman	H. Lowery	P. Skinner	O.J. Dilstrap	Russ Childs	R. Elgin	P. Guill
					P. [illegible]	QA Tech Serv.	L. Firebaugh

Form 35387 (R10-88)

PROBLEM INVESTIGATION REPORT

PIR No. 1-090-0046

VI. Proposed Resolution of Problem

Design Engineering review of the piping system has determined that the pipe will remain within code allowables with the U-bolt removed. It is therefore proposed that the missing U-bolt for support # 1-SIA-0-479A-H7R not be replaced.

Other Approved [signature] 5-21-90 Date

Other Approved [signature] 5/21/90 Date

Approved [signature] Date

Approved T.J. Coleman QA 5-22-90 Date

SCAE Required ☐ Yes ☒ No

Determined By/Date T.J. Coleman QA 5-22-90 Date

SCAE Assigned To:

Serial No.

Remarks Design Engineering Evaluation & the additional sample inspected per ASME Sect XI is sufficient

VII. QA Verification Requirements No Further QA Verification Required. T.J. Coleman 5-22-90

Assigned To Date

VIII. Corrective Action Completed

Information forwarded to Maintenance (Milton Addis) about resolution. No further corrective action necessary as stated in section VI Rick Mathena 5/22/90

Approved Date

IX. QA Verification Results NA [signature]

Completed By Date

QA Approval Date

Remarks

[signature] 5.22.90

DESIGN ENGINEERING DEPARTMENT
OPERABILITY EVALUATION

Station: Oconee Unit: 1 PIR Number: 1-090-0046

Structure, system, or component (SSC) in question: S/R # 1-51A-0-479A-H7A Rev. 02 CISI Item # F1.01.083) Prob. No. 1-51-15

Design basis references applicable: N/A

Technical Specification sections applicable: N/A

The SSC in question is recommended to be:

☑ OPERABLE ☐ CONDITIONALLY OPERABLE ☐ INOPERABLE
Operability Evaluation expiration date: _____

FSAR change required ☐ Yes ☑ No 10 CFR 50.59 Evaluation required ☐ Yes ☑ No

Summary/Comments:

Design Engineering review of support # 1-51A-0-479A-H7A during ISI EOC-12 for Unit 1 determined that this support was inoperable as a lateral restraint. However, further review revealed that the piping system was operable with the lateral portion of this support removed.

Originated by: [signature] Date: 5-21-90

Reviewed by: SR Christopher Date: 5-21-90

Approved by: SJ Cowart Date: 5/21/90

Form 35372 (R6-89)

COMPLETE FORM BY PRINTING WITH BLACK BALL POINT PEN OR TYPE

...ATION ONLY

DUKE POWER COMPANY
NUCLEAR STATION

Problem Investigation Report Serial No. 1-090-0052
Station Oconee
Licensee Event Report No.

I. Problem Occurred-Time/Date: UNKNOWN Discovered-Time/Date: 5-22-90
Unit(s): 1 Unit Status At Time Problem Occurred/Discovered: Refueling Outage
Description and Cause of Problem: During ISI Inspection (Ultrasonic Examination) of Steam Generator 1B upperhead to tubesheet weld (ISI Item # B02040003 ID# 1SGB-W658-1) a reportable indication was revealed.

Other Duke Stations Affected ☐ Yes ☑ No Determined By/Date: TJ Coleman 5-22-90
Comments: This PIR to be resolved prior to Unit 1 startup.

Location of Problem: OTSG 1B
Method Used to Discover Problem: This Report
Immediate Corrective Actions Taken/(To Be Taken): None

Work Stoppage Notification (Form QCK-2A) Serial No.: N/A
Information Sources/References (Work Requests, Documents Violated, etc.): ASME XI

Originated By: TJ Coleman Date: 5-22-90 Dept./Group/Section: QA Tech Support

II. **Compliance Evaluation**-Item/System Operable ☑ Yes ☐ No ☐ Not Applicable
Evaluated By/Date: Rick Matheson 5/22/90 Comments:
Reportable ☐ Yes ☑ No Reportable Per: ☐ 50.73 Section ☐ 50.72 Section
☐ 73.71 Section ☐ T.S./Lic Cond Section ☐ Part 21 ☐ Other: ☐ Part 50.9
Evaluated By/Date: Rick Matheson 5/22/90 Comments:

III. Telecon/ENS Report to NRC Time/Date:
NRC Contactee(s): DPC Contactor(s):
Telegraph/Mailgram/Facsimile Transmission to NRC-Date:
Date Notified: NRC Res. Inspector: Station Manager:
General Office: Comments:

IV. Investigation Assigned To: NRC Report Due Date:
Date Due to Compliance after Evaluation:
PIR Review (Compliance): Date:
PIR Station Manager Approval: Date:

V. Further Action/Evaluation Required ☑ Yes ☐ No (Explain Below):
Page 2 Assigned To: QA
Comments:

Compliance Review: Date: QA Review: Date:

Distribution RSW 5/22/90 GO B. Dobson C. Boyd M. Sills

Initial	Originator						
5-22-90	TJ Coleman	Andy Hogge / Tim Tucker	Supt (4) / H. Lowery	J. McClure / P. Stinson	B. Bason / L. Elgin	R. Henderson / P. Guill	L. Faircloth / QA Tech Support
Final	Originator						

EC12A QA

Form ... (R6-89)

COMPLETE FORM BY PRINTING WITH BLACK BALL POINT PEN OR TYPE

INFORMATION ONLY

DUKE POWER COMPANY
NUCLEAR STATION

Problem Investigation Report Serial No. 1-090-0052
Station Oconee
Licensee Event Report No.

I. Problem Occurred-Time/Date: Unknown Discovered-Time/Date: 5-22-90
Unit(s): 1 Unit Status At Time Problem Occurred/Discovered: Refueling Outage
Description and Cause of Problem: During ISI inspection (ultrasonic examination) of Steam Generator 1B upperhead to tubesheet weld (ISI item # B02.040.003 ID# 1SGB-W658-1) a reportable indication was revealed.

Other Duke Stations Affected ☐ Yes ☑ No Determined By/Date: TJ Coleman / 5-22-90
Comments: This PIR to be resolved prior to Unit 1 startup.

Location of Problem: OTSG 1B
Method Used to Discover Problem: This Report
Immediate Corrective Actions Taken/To Be Taken: None

Work Stoppage Notification (Form QCK-2A) Serial No.: N/A
Information Sources/References (Work Requests, Documents Violated, etc.): ASME XI

Originated By: TJ Coleman Date: 5-22-90 Dept./Group/Section: QA Tech. Supp.

II. **Compliance Evaluation**-Item/System Operable ☑ Yes ☐ No ☐ Not Applicable
Evaluated By/Date: Rick Matheson 5/22/90 Comments:
Reportable ☐ Yes ☑ No Reportable Per: ☐ 50.73 Section ☐ 50.72 Section
☐ 73.71 Section ☐ T.S./Lic Cond Section ☐ Part 21 ☐ Other: ☐ Part 50.9
Evaluated By/Date: Rick Matheson 5/22/90 Comments:

III. Telecon/ENS Report to NRC Time/Date:
NRC Contactee(s): DPC Contactor(s):
Telegraph/Mailgram/Facsimile Transmission to NRC-Date:
Date Notified: NRC Res. Inspector: Station Manager:
General Office: Comments:

IV. Investigation Assigned To: NRC Report Due Date:
Date Due to Compliance after Evaluation:
PIR Review (Compliance): Date:
PIR Station Manager Approval: Date:

V. Further Action/Evaluation Required ☑ Yes ☐ No (Explain Below):
Page 2 Assigned To: ~~QA~~ Mech Maint.
Comments:

Compliance Review: Rick Matheson Date: 6/12/90 QA Review: TJ Coleman Date: 5-31-90

Distribution RSW 5/22/90 GO

Initial	Originator				B. Dobson	C. Boyd	M. Sills
5-22-90	TJ Coleman	Andy Hogge / Tim Tucker	Supt (4) / H. Lowery	J. McClure / P. Skinner	B. Barron / R. Elgin	R. Henderson / P. Guill	L. Fiuhaugh / QA Tech Serv.
Final	Originator	Andy Hogge	Supt (4)	J. McClure	B. Barron	R. Henderson	L. Fiuhaugh
6-12-90	TJ Coleman	Tim Tucker	H. Lowery	P. Skinner	R. Elgin	P. Guill	QA Tech Serv. / P. Abraham

Form. 35387 (R11-87)

PROBLEM INVESTIGATION REPORT

PIR No. 1-090-0052

VI. Proposed Resolution of Problem QA to attach a copy of the ISI Report identifying details of the defect identified during the inspection. QA to attach a copy of the Facture mechanics Analysis allowing for continued operation with defect.

This is considered to be a KNOWN generic item applicable to pressure vessels at all Nuclear Power plants. MAA 5-28-90

Other Approved _____ Date _____ Approved [signature] Date 5/29/90

Other Approved _____ Date _____ Approved T.J. Coleman QA Date 5-31-90

Significant Corrective Action Evaluation Assigned To: N/A Due to the evaluation performed and the monitoring of the Indication during the ISI program NO SCAE required

Serial No. _____

VII. QA Verification Requirements Ensure an Evaluation Report and the associated Fracture Mechanics Analysis are attached to this report Ensure an IST Plan Addendum is initiated for additional Examination

Assigned To Tech Support Date 5-31-90

VIII. Corrective Action Completed N/A additional Examination will be performed to monitor the indication MAA 5-31-90

Approved _____ Date _____

IX. QA Verification Results Verified Evaluation Report #901-002 and the associated Fracture Mechanics were attached and IST Plan Addendum 1-CCC-0289 issued

Completed By T.J. Coleman 6-4-90 Date QA Approval [signature] 6.4.90 Date

Remarks _____

Final QA Review T.J. Coleman 6-4-90 Date

BABCOCK & WILCOX
NUCLEAR POWER GENERATION DIVISION
VOLUMETRIC EXAMINATION EVALUATION REPORT

BWNP-20525-1(11-81)

EVALUATION NUMBER: 901-002

METHOD: UT X RT ____

FILE NO. OR REFERENCE:

WELD NO. OR IDENTIFICATION: STM. GEN. 1B HEAD TO TUBESHEET, ID# 1SGB-WC-58-1
APPLICABLE CODE YEAR AND ADDENDA: ASME, SEC XI 1980 THRU WIN. 1980 ADDENDA
DATE OF INITIAL EXAMINATION: 6 MAY '90 RE-EXAMINATION: ____
REPORTABLE INDICATION NUMBER(S): 200, 400, 401 & 402
COMMENTS: ____

ORIGINATOR: Howard Stoppelmann LEVEL: II DATE: 8 MAY '90

PRELIMINARY DISPOSITION

ACCEPTANCE STANDARD: IWB-3511-1

COMMENTS: Indications #200/#402 are from the same reflector which is an unacceptable subsurface planar flaw. Indications #400 and #401 are acceptable separate subsurface planar flaws. See attachment 1 for calculations.

☑ ACCEPTABLE INDICATION NUMBER(S) 400, 401
☐ REJECTABLE INDICATION NUMBER(S) 200 & 402

LEVEL III: M. G Hacker DATE: 5-11-90

FRACTURE MECHANICS ANALYSIS ☑ YES ☐ NO DOCUMENT NUMBER 32-1179753-00

FINAL DISPOSITION

COMMENTS: Indications 400 and 401 are acceptable separate subsurface planar flaws. See attachment 1. Indications 200 and 402 are from the same reflector which has been evaluated as acceptable per the latter referenced fracture mechanics analysis.

☒ ACCEPTABLE INDICATION NUMBER(S) 400, 401, 200, 402
☐ REJECTABLE INDICATION NUMBER(S) ____

LEVEL III: Kenneth Hacker DATE: 6-1-90

FIGURE NO. B02.040.023

NFE 17-II XIB
HSD 4-96
6

B&W NUCLEAR TECHNOLOGIES

CALCULATIONAL SUMMARY SHEET (CSS)

DOCUMENT IDENTIFIER 32-1179753-00

TITLE OC-1 OTSG FLAW EVALUATION

PREPARED BY:	REVIEWED BY:
NAME ASHOK NANA	NAME K.K YOON
SIGNATURE A.D Nana	SIGNATURE K K Yoon
TITLE ENGR. IV	DATE 5/31/90
TITLE Mgr.	DATE 5/31/90
COST CENTER 308	REF. PAGE(S) 12
TM STATEMENT: REVIEWER INDEPENDENCE	NDM

PURPOSE AND SUMMARY OF RESULTS:

Purpose

The purpose of this calculation is to evaluate a flaw indication, found in Oconee Unit 1 Steam Generator 1B, according to the ASME Code Section XI procedure.

Results

The flaw indication is found to be acceptable by evaluation according to the ASME Section XI, IWB-3612 for 120 future heatup/cooldown cycles.

THE FOLLOWING COMPUTER CODES HAVE BEEN USED IN THIS DOCUMENT:

CODE / VERSION / REV	CODE / VERSION / REV
NONE	

THIS DOCUMENT CONTAINS ASSUMPTIONS THAT MUST BE VERIFIED PRIOR TO USE ON SAFETY-RELATED WORK

YES ( ) NO (X)

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

RECORD OF REVISIONS

Revision	Description of Revision	Date
00	Original Release	5/90

PREPARED BY A.D. Nana DATE 5/21/90

REVIEWED BY K.K. Yoon DATE

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

TABLE OF CONTENTS

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

1.0 INTRODUCTION

During the May 1990 inspection, there were a number of flaw indications detected in the tubesheet to head weld regions of the Oconee-1 Steam Generator 1B. The indications are reported in Appendix A. The flaw indications were located in the circumferential weld between the upper head and the tubesheet of the steam generator. The weld is identified in Reference 3 as WG-58 with details given in the enlarged view "X" of Reference 2. The purpose of this analysis is to determine the acceptability of the reported indication that exceeds the IWB-3500 acceptance standards of Reference 4. The flaw indication that requires an evaluation is the combined indications of #200 and #402 as described in Appendix A. Using the stresses from Reference 7, the above indication is evaluated in accordance with the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 4).

2.0 STRESSES

This section summarizes the stresses in the vicinity of the flaw. Per Appendix A, the flaw was detected in the circumferential weld region of the upper head to tubesheet juncture of OTSG-1B.

2.1 Normal/Upset Condition Stresses

The thermal and pressure stresses of the upper tubesheet region is contained in Reference [7]. Since the results are total stresses obtained from the NASTRAN finite element analysis, they have to be linearized. The linearized stresses are shown schematically on Page 3 of Reference 8 and reported below:

Transient	Linearized Stresses in ksi		
	Inside Surface	Outside Surface	Membrane
Heatup	-20.1	28.1	4.0
Cooldown	49.2	-33.6	7.8

Note that the maximum tensile stress occurs at the inside surface during normal cooldown. Since the flaw is located 0.31 inches from the inside surface, the bending stress at the crack tip is 38.2 ksi. This stress value is used in the computation of the acceptable number of heatup/cooldown cycles on the following two pages.

Flaw Location : OTSG 1B Head to Tubesheet, ID# 1SGB-WG 58-1
Indication # : 200 & 402
**** Using Stresses from NASTRAN Model & Linearizing ****

A. Stress Intensity Factor Calculation for an Elliptical Subsurface Flaw

Flaw Geometry Input :

Wall Thick.,(t)	=	8.05 in.
Distance, S	=	0.31 in.
Flaw depth, a	=	0.57 in.
Flaw length, l	=	6.1 in.
Eccentricity, e	=	3.145 in.

For Normal and Upset Condition :

Maximum Stress State :-		Decay Heat Trans.
Membrane Stress, SIGm	=	7.8 ksi
Bending Stress, SIGb	=	38.2 ksi
Yield Strength, SIGys	=	50 ksi

a/l	=	0.09	2a/t	=	0.14
(SIGm + SIGb)/SIGys	=	0.92	2e/t	=	0.78

From Appendix A, Section XI, ASME B&PV Code :

Q	=	0.9 (Fig. A-3300-1)
Mm	=	1.1 (Fig. A-3300-2)
Mb	=	0.89 (Fig. A-3300-4)

KI(ai) = 60.1 ksi sqrt.in

B. Fatigue Flaw Growth Analysis:

For delta KI determination :

Normal and Upset Condition :

No.of Cycles (N)	=	120 (assumed)
Membrane Stress, SIGm ;		
Due to Heatup	=	4 ksi
Due to Cooldown	=	7.8 ksi
Delta SIGm	=	7.8 ksi

From Fig.A-4300-1
For Subsurface Flaws
(air environment) ;

C	=	2.7E-11
n	=	3.726

da/dN = c(Delta KI)^n

Bending Stress, SIGb ;

		Inside	Outside
Due to Heatup	=	-22.2 ksi	22.2 ksi
Due to Cooldown	=	38.2 ksi	-38.2 ksi
Delta SIGb	=	60.4 ksi	

Delta KI = (D1 + D2)*Sqrt.(ai)
where ;
D1 = 16.0 (Delta SIGm * Mm * Sqrt.(pi/Q))
D2 = 100.4 (Delta SIGb * Mb * Sqrt.(pi/Q))
D1 + D2 = 116.5
Delta KI= 87.9 ksi sqrt.in
da/dN = C*(Delta KI)^n
da/dN =0.000468 in/cycle; C = 2.7E-11 ; n = 3.726

The final crack size, af, in terms of initial crack size, ai, and above constants ;
af = [ai^B + B*C*(D1+D2)^n * N]^(1/B)
where ;
ai = 0.57 in.
B = -0.863 (1 - n/2)
af = 0.632 in.

Calculating KI based on final flaw size ;

KI(af) = 63.2 ksi sqrt.in.

C. Safety Factor Assesment :
Material Fracture Toughness:
Per Fig. 3.0-2 of Ref.[6], since oper. temp. > 250 F
(Worst Case HU/CD Transient = CD Trans. 1B2 @ 3.125 hrs.)
KIa(250) = 200 ksi sqrt. in. (See Section 3.0)

For Normal/Upset Condition, per IWB-3612,
KIa/KI > sqrt.10 = 3.16
KIa/KI(af) = 3.16
Therefore, this flaw is acceptable for 120 future cycles.

2.2 Emergency and Faulted Loading Condition Stresses

The stresses due to the emergency/faulted condition, for the upper head to tubesheet weld region are reported in Section 2.4 of Reference 5. The stresses for this loading category are obtained by superimposing the stresses due to LOCA (loss of coolant accident) with the maximum primary pressure stresses of 2566 psi to include the effects of MSLB (main steam line break) and FWLB (feedwater line break) events. The linearized stresses are summarized below:

Transient	Longitudinal stress (ksi)			
	Inside	Outside	Membrane	Bending
LOCA	52.0	-30	11.0	+/-11.0
Pressure (2566psi)	29.2	-11.3	9.0	+/-20.2

The membrane plus bending stress at the crack tip corresponds to 28 ksi due to pressure(2566 psi) and 49 ksi due to LOCA. Therefore, conservatively assume the membrane stress to be 20 ksi and the rest of the stress at the crack tip as bending i.e. 77 - 20 = 57 ksi. These stresses will be used in the KI calculation on the following page.

Flaw Location : OTSG 1B Head to Tubesheet, ID# 1SGB-WG 58-1
Indication # : 200 & 402
**** Using Stresses from NASTRAN Model & Linearizing ****

A. Stress Intensity Factor Calculation for an Elliptical Subsurface Flaw

Flaw Geometry Input :

Wall Thick.,(t)	=	8.05 in.
Distance, S	=	0.31 in.
Flaw depth, a	=	0.57 in.
Flaw length, l	=	6.1 in.
Eccentricity, e	=	3.145 in.

For Emergency and Faulted Condition :

Maximum Stress State :-

Membrane Stress, SIGm	=	20 ksi
Bending Stress, SIGb	=	57 ksi
Yield Strength, SIGys	=	50 ksi

a/l	=	0.09	2a/t	=	0.14
(SIGm + SIGb)/SIGys	=	1.54	2e/t	=	0.78

From Appendix A, Section XI, ASME B&PV Code :

Q	=	0.8 (Fig. A-3300-1)
Mm	=	1.1 (Fig. A-3300-2)
Mb	=	0.89 (Fig. A-3300-4)

KI(af) = 108.8 ksi sqrt.in

As indicated previously in this Section
KIc = 200 ksi sqrt.in (See Section 3.0)

For Emergency nd Faulted Condition, per IWB-3612,

KIc/KI > sqrt. 2 = 1.414

KIc/KI(af) = 1.838

Therefore, this flaw is acceptable for Emergency & Faulted Cond

3.0 Fracture Toughness Determination

The maximum tensile stress at the upper head to tubesheet juncture occurs during the cooldown at 15% power (3.125 hrs into the transient) when the RCS temperature is 250 F. Note that it is the stresses due to this cooldown transient that is evaluated in Section 2.0. This transient is illustrated in Figure 3.0-2 on Page 3-11 of Reference 6.

For the SG shell there is no appreciable fluence cummulation, hence,

RT_{NDT} = initial RT_{NDT}
= 60°F (assumed)

$T - RT_{NDT} = 250-60 = 190°F$

From Fig. A-4200-1 of Ref. 4, K_{Ia} = 200 ksi $\sqrt{in}$.

For the Emergency and Faulted Condition, the RCS temperature when the pressure is at 2566 psi is significantly greater than 250 F and the minimum RCS temperature during the emergency and faulted condition events is greater than 250 F. Therefore, KIc is also 200 ksi$\sqrt{in}$ per Fig. A-4200-1.

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

4.0 Conclusion

The combined indication (200 & 402) evaluated in this document is found to be acceptable for 120 future heatup/cooldown cycles (since May 1990) per the IWB-3612 criteria.

5.0 References

1. Not used.

2. B&W Drawing 02-129316E-9, "Assy. and Detail of Upper Head". (NSS-3).

3. B&W Drawing 02-129312E-13, "Shell and Tubesheet Attachment Assembly". (NSS-3).

4. ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition through Winter 1980 Addenda.

5. B&W Document 32-1173627-00, "ANO-1 OTSG Flaw Evaluation", Nov. '88. (For Owners Group OTSG Emergency and Faulted Condition Stresses @ Upper Head to Tubesheet Juncture).

6. B&W Document 32-9811-01, "177 OTSG Minimum Tube Wall Thickness", Nov. 1979.

7. B&W Document 32-1134568-00, "OTSG Stresses - Heatup, Cooldown, Loca", July 1982.

8. B&W Document 32-1153946-00, "ISI Flaw Evaluation, Steam Generator Upper Head to Tubesheet", Nov. 1984.

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

6.0 Appendix A

The following is the Volumetric Examination Evaluation Report that contains flaw indications, in the upper head to tubesheet region of Oconee Unit-1 OTSG-1B, found during the May 1990 inspection.

Babcock & Wilcox
a McDermott company

VOLUMETRIC TEST DATA

CUSTOMER: Duke Power Co. Oconee Unit :	CONTRACT NO.: 702-2034	COMPONENT: Steam Gen. 1B (Vessel)
DESCRIPTION: Steam Gen. 1B (Upper Head To Tube Sheet Pc 8 To 51)		THERMOMETER: OCQA-223
I.D. NO.: 1SGB-WG58-1	PROCEDURE: ISI-130 Rev. 24	MATERIAL: C/S
THICKNESS: 8.5"	TEST SURF.: OD	
NO. POSITIONS: 36	DISTANCE: 12.0"	NO. I REFERENCE: 20
BEAM DIRECTION: ☐ LONG ☑ SHEAR	LIMITED EXAM: ☐ NO ☑ YES ?	
EXAMINER: DJ Moss / D.C. [illegible]	I.D. NO.: M-E250 R-9615	LEVEL: II
EXAMINER: J W Sitz / [illegible]	I.D. NO.: B9449 S-5643	LEVEL: II

CAL SHEET:	901023	901010	901011	
ANGLE:	0	45	60	
TIME START:	1242 HR.	1830 HR.	1230 HR.	N/A HR.
TIME STOP:	1457 HR.	2020 HR.	1830 HR.	HR.
PART TEMP.:	88 °F	88 °F	88 °F	°F
DATE:	5-6-90	5-6-90	5-6-90	

NOTES: INDICATION 200 MEAS. TAKEN FROM TUBE SHT TAPER
#1 REF. STARTS AT X-AXIS
old data states W-AXIS
No MAX TWD DIMENSION WAS OBTAINABLE DUE to THE GEOMETRY WHERE THE HEAD RADIUS STARTS (402) ONLY

1ST SCAN / 2ND SCAN: N/A
60° REQUIRED ✓
60° NOT REQUIRED

CAL BLK.: 40305
DWG NO.: OM-201-1893 ISI-OCNI-004
FCA(S): CAT. 89.006

WELD INFORMATION & 0° THICKNESS

SURFACE NO.2				SURFACE NO.1
Tube Sheet	HTH:	Flush		Upper Head
BM: N/A	WD:	4.0"		BM: 9.045
HAZ: N/A	℄:	8.44		HAZ: 8.743
	MIN:	8.3		
	MAX:	8.6		

INDICATION NO(S)	POSITION OR PART ITEM A	POSITION OR PART ITEM B	ANGLE (DEGREES)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX. AMP. %DAC	LAM. DEPTH (INS)	LGTH 20%	WDTH 50% / XMA	100%	CRYSTAL DISTANCE FROM (INCHES) A	B	1	2	THROUGH WALL DIMENSION MINIMUM DEPTH	MIN POSITION (INCHES) 1 A	MIN POSITION (INCHES) 2 B	MAXIMUM DEPTH	MAX POSITION (INCHES) 1 A	MAX POSITION (INCHES) 2 B	DAMPS	REMARKS
	360°		0°			No	Recordable		Indications														
200	27 to 28		45°	1	2	Sep.	282	7.437		6.1			5.4		10.75	7.135		10.15	7.638		11.2	No	
							50	7.437					1.6		10.5								50% EP
							50	7.337					7.7		10.5								50% EP
							224	7.235					4.5		10.3	7.135		10.0	7.738		11.0	No	
							224	7.537					3.6		10.6	7.135		9.9	7.737		10.8	No	
							125	7.235					2.7		10.5	7.235		10.2	7.738		11.0	No	
							50	7.235					1.8		10.5	7.135		10.0	7.638		11.0	No	
							125	7.538					6.3		10.5	7.135		10.0	7.537		10.9	No	
							50	7.336					7.2		10.5	7.135		10.2	7.537		11.0	No	
	360°		45°			No	Other		Recordable		Indications												

REVIEWED BY: Howard Stoppelman	LEVEL: II	DATE: 8 MAY '90	FIGURE NO.: B02.040.003

ANGLE	0 DEG.	45 DEG.	60 DEG.	OTHER	E.R. REQUIRED: ☑ YES ☐ NO	E.R. NUMBER: 901-002
IND. NOS.	1 TO 199	200 TO 399	400 TO 599	600 TO 799		

BABCOCK & WILCOX

VOLUMETRIC TEST DATA FORM 101

BWNP-20531-3 (10-84)

CUSTOMER: DUKE POWER CO. OCONEE I | CONTRACT NO: 702-2034 | COMPONENT: VESSEL SGB

EXAMINER: J.W. Setzer | ID: S-5643 | LEVEL II | DATE(S): 5-6-90

EXAMINER: JSBill | ID: B-9449 | LEVEL II

IND. NO.	POSITION OR PART ITEM	ANGLE (DEG)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX AMP % DAC	LAM. DEPTH (IN.)	LNGTH 20%	WDTH 50% OR HMA	WDTH 100%	(INCHES) CRYSTAL DISTANCE FROM LENGTH A	B	1	2	THROUGH WALL DIMENSION MINIMUM DEPTH	MIN POSITION IN. 1 A	MIN POSITION IN. 2 B	MAXIMUM DEPTH	MAX POSITION IN. 1 A	MAX POSITION IN. 2 B	DAMPS	REMARKS
400	25 to 27	60	1	2	SEP	125	7.3		1.0			12.0		12.6	7.1		12.0	7.5		13.1	NO	
						50	7.4					11.6										
						50	7.3					12.6										
401	20 to 21	60	1	2	SEP	80	7.1		1.5			2.5		12.0	6.9		11.5	7.2		12.1	NO	
						50	7.1					2.0										
						50	7.1					3.5										
402	27 to 28	60	1	2	SEP	251	6.8		4.4			5.1		13.2	6.6		12.9				NO	
						50	6.8					2.8		13.2								
						50	6.8					7.2		13.2								
						261	6.8					3.7		13.2	6.6		12.9					SEE NOTES
						251	6.8					4.6		13.2	6.6		12.9					
						260	6.8					5.5		13.2	6.6		12.9					
						159	6.8					6.4		13.2	6.6		12.9					
	360°	60		NO	OTHER RECORDABLE INDICATIONS																	

REVIEWED BY: Howard Stoppelman | LEVEL: II | DATE REVIEWED: 8 MAY '90 | FIGURE NO.: B02-040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: ISGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☑ A ☐ B
BETWEEN POINTS 3 AND 5 . 8.5 INCHES FROM POINT 3 TO 8.5
INCHES FROM POINT 5 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scub in Shipping Tie Down Removal AREA

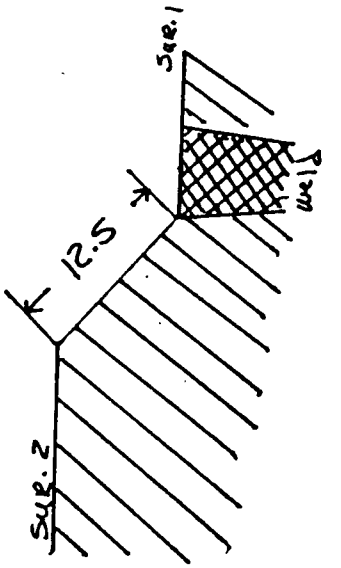
☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS ____ AND ____ . ____ INCHES FROM POINT ____ TO ____
INCHES FROM POINT ____ . ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☑ A ☑ B
360 DEGREES. 3.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Taper on Tube sheet Area

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:



SEE ATTACHMENT NO(S).: ____

REVIEWED BY: Howard Hirschman LEVEL: II, DATE: 8 MAY '90

FIGURE NO.: BOZ.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: 1SGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 34 . 0.0 INCHES FROM POINT 33 TO 2.0
INCHES FROM POINT 34 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM~~ WELD ℄
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scub in shipping tie Down Removal Area

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 35 AND 3 . 5.0 INCHES FROM POINT 35 TO 5.0
INCHES FROM POINT 3 . 19.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM~~ ~~WELD~~ ℄
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: MANWAY

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

NOTES:

SKETCH:

SEE ATTACHMENT NO(S): _____

REVIEWED BY: Howard Stoppelman, LEVEL: II, DATE: 8 MAY '90

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 26 AND 30 . 6 INCHES FROM POINT 26 TO 6
INCHES FROM POINT 30 . 15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Support Pad

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 4 AND 5 . 3.5 INCHES FROM POINT 4 TO 6.5
INCHES FROM POINT 5 . 8.5 INCHES FROM WELD ℄ TO 11.5 INCHES FROM WELD ℄
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: 1½"ø VENT CONN.

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/a
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:

SEE ATTACHMENT NO(S): ____

REVIEWED BY: Howard Hagaman, LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 12 AND 16.6 INCHES FROM POINT 12 TO 6
INCHES FROM POINT 16.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 19 AND 23.6 INCHES FROM POINT 19 TO 6
INCHES FROM POINT 23.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/a
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/a
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:

SEE ATTACHMENT NO(S): ____

REVIEWED BY: Hermann Hinzelmann LEVEL: II, DATE: 8 MAY '90

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY , SITE: OCONEE , UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: SG B , I.D. NO.: 1SGB-WG58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☑ 2 — BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 2 . 7 INCHES FROM POINT 33 TO 6 INCHES FROM POINT 2 . 15 INCHES FROM WELD ℄ ~~TO ____ INCHES FROM WELD ℄~~ AND BEYOND.
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☑ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☑ 2 — BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 5 AND 9 . 6 INCHES FROM POINT 5 TO 6 INCHES FROM POINT 9 . 15 INCHES FROM WELD ℄ ~~TO ____ INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

~~☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B~~
~~____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄~~
N/A
~~ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A~~
~~DUE TO:~~

~~☐ NO SCAN ☐ LIMITED SCAN — SURFACE ☐ 1 ☐ 2 — BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B~~
~~____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄~~
N/A
~~ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A~~
~~DUE TO:~~

NOTES:

SKETCH:

SEE ATTACHMENT NO(S).:

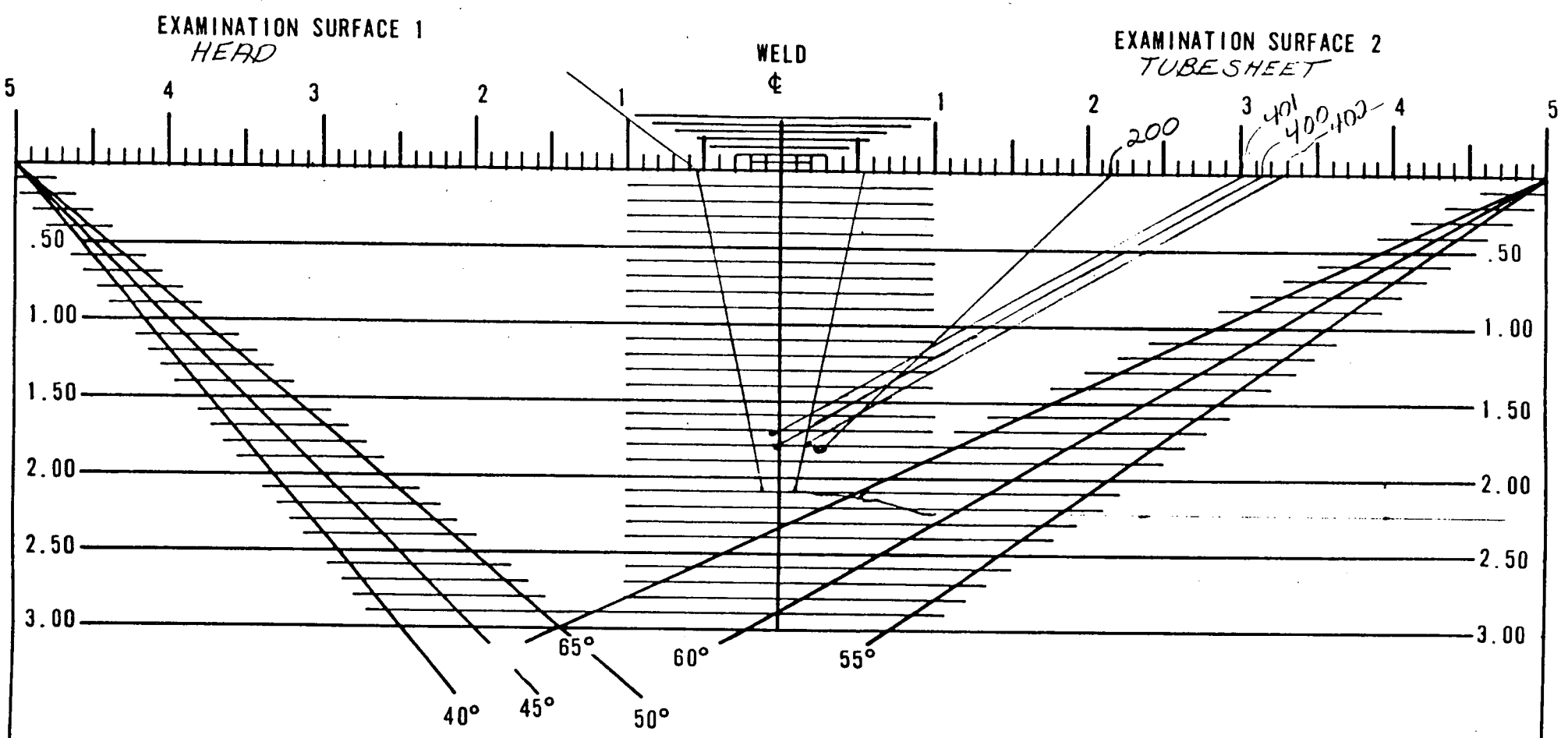
REVIEWED BY: Howard Hoggelow [signature] LEVEL: II , DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

BABCOCK & WILCOX
UTILITY PO ENERATION DIVISION

INDICATION PLOT SHEET

BWNP 20 1(5-83)

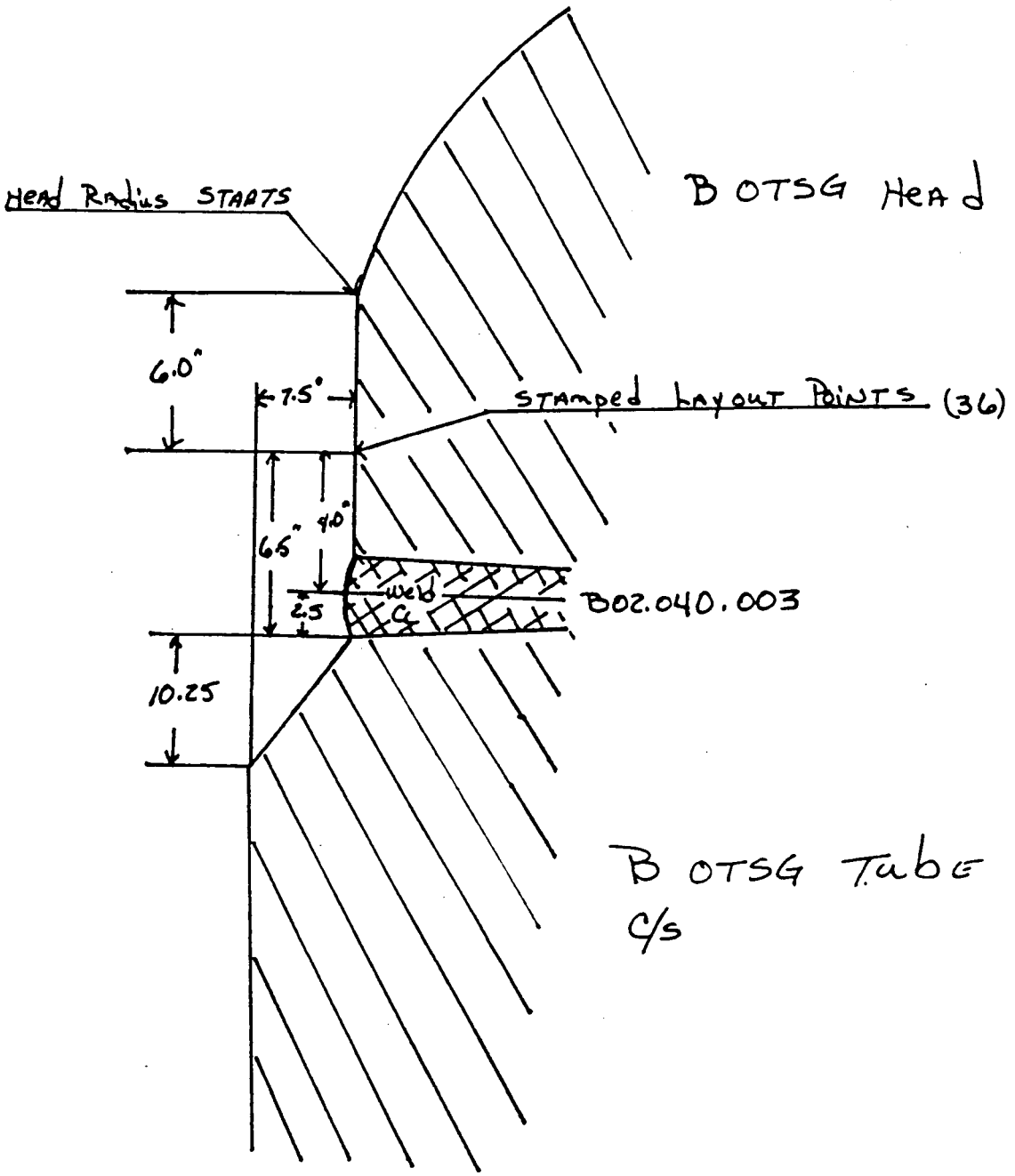


COMMENTS:

☐ GEOMETRIC ☐ REPORTABLE

CUSTOMER:	DUKE POWER CO OCONEE 1
PROJECT NO:	702-2034
WELD NO:	1SGB-WG-58-1
ANALYST:	
SNT LEVEL:	
DATE:	
FIGURE NO:	B02.040.023

ATTACHMENT TO B02.040.003



D. C. Robinson

5-7-90

B&W NUCLEAR TECHNOLOGIES

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CONTRACT NO. 702-2034 | PLANT Oconee Unit 1 | CHARGE NO. | Page 1 of 1

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140	32-1179753-00	OC-1 OTSG Flaw Evaluation	S	N	N
		Keywords : Fracture Mechanics, Flaw Evaluation, OTSG, LEFM.			

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(SIGNATURE) _____ DATE _____

(PRINTED NAME) _____

RELEASED BY (PREPARER):

(SIGNATURE) A.D Nana 5/31/90 DATE

(PRINTED NAME) ASHOK NANA

REVIEWED BY:

(SIGNATURE) K K Yoon 5/31/90 DATE

(PRINTED NAME) K. K. YOON

ATTACHMENT 1

DUKE POWER CO.
OCONEE - UNIT #1
STEAM GENERATOR 1B
UPPER HEAD TO TUBESHEET: 1SGB-WG58-1

EVALUATION OF INDICATIONS:
FIG. NO. B02.040.003
EVALUATION REPORT NO.: 901-002

INDICATION #200/#402

$t = 8.3" - .25" = 8.05"$
$S = 8.05" - 7.738" = .31"$
$2d = 7.738" - 6.6" = 1.14"$
$d = 1.14"/2 = .57"$
$.4d = .4 \times .57 = .23"$
$S > .4d$ = SUBSURFACE FLAW
$a = d = .57"$
$l = 6.1"$
$a/l = .57/6.1 = .09$
$a/t = .57/8.05" = 7.1\%$
IWB-3511-1 ALLOWABLE FOR .09 ASPECT RATIO IS $2.88Y$
$Y = S/a = .31/.57 = .544$
$2.88 \times .544 = 1.57\%\ a/t$

$7.1\%\ a/t > 1.57\%\ a/t$ = UNACCEPTABLE

INDICATION # 400

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.5" = .45"$

$2d = 7.5" - 7.1" = .4"$

$d = .4"/2 = .2"$

$.4d = .4 \times .2 = .08"$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .2"$

$l = 1.0"$

$a/l = .2/1 = .2$

$a/t = .2/8.05 = 2.5\%$

IWB-3511-1 ALLOWABLE FOR .2 ASPECT RATIO IS $3.6Y$ a,

$Y = S/a = .45/.2 = 2.25$, IF $Y > 1$, $Y = 1$

2.5% a/t $< 3.6\%$ a/t = ACCEPTABLE

INDICATION # 401

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.2" = .805"$

$2d = 7.2" - 6.9" = .3"$

$d = .3/2 = .15"$

$.4d = .4 \times .15 = .06$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .15"$

$l = 1.5"$

$a/l = .15/1.5 = .10$

$a/t = .15/8.05 = 1.9\%$

IWB-3511-1 ALLOWABLE FOR .10 ASPECT RATIO IS 2.9Y a/t

$Y = S/a = .805/.15 = 5.37$, IF $Y > 1$, $Y = 1$

1.9% a/t < 2.9% a/t = ACCEPTABLE

M. G Hocker Level III 5-11-90

32-1179753-00

10.0 Reference Documents

The following reference documents apply to the inservice inspection performed during Outage 12 at Oconee 1.

Babcock and Wilcox Volumetric Examination Evaluation Report 901-002, dated May 8, 1990.

Babcock and Wilcox Fracture Mechanics Analysis Report No. 32-1179753-00.

Duke Power Company Request for Relief ONS-009.

Duke Power Company Request for Relief ONS-013.

BABCOCK & WILCOX
NUCLEAR POWER GENERATION DIVISION
VOLUMETRIC EXAMINATION EVALUATION REPORT

BWNP-20525-1(11-81)

EVALUATION NUMBER: 901-002

METHOD: UT X RT ____

FILE NO. OR REFERENCE:

WELD NO. OR IDENTIFICATION: STM. GEN. 1B HEAD TO TUBESHEET, ID# 1SGB-WG-58-1
APPLICABLE CODE YEAR AND ADDENDA: ASME, SEC XI 1980 THRU WIN. 1980 ADDENDA
DATE OF INITIAL EXAMINATION: 6 MAY '90 RE-EXAMINATION: ____
REPORTABLE INDICATION NUMBER(S): 200, 400, 401 & 402
COMMENTS: ____

ORIGINATOR: Howard Stoppelmann LEVEL: II DATE: 8 MAY '90

PRELIMINARY DISPOSITION

ACCEPTANCE STANDARD: IWB-3511-1

COMMENTS: Indications #200/#402 are from the same reflector which is an unacceptable subsurface planar flaw. Indications #400 and #401 are acceptable separate subsurface planar flaws. See attachment 1 for calculations.

☑ ACCEPTABLE INDICATION NUMBER(S) 400, 401
☑ REJECTABLE INDICATION NUMBER(S) 200 & 402

LEVEL III: M. G. Hacker DATE: 5-11-90

FRACTURE MECHANICS ANALYSIS ☑ YES ☐ NO DOCUMENT NUMBER 32-1179753-00

FINAL DISPOSITION

COMMENTS: Indications 400 and 401 are acceptable separate subsurface planar flaws. See attachment 1. Indications 200 and 402 are from the same reflector which has been evaluated as acceptable per the latter referenced fracture mechanics analysis.

☒ ACCEPTABLE INDICATION NUMBER(S) 400, 401, 200, 402
☐ REJECTABLE INDICATION NUMBER(S) ____

LEVEL III: Kenneth Hacker DATE: 6-1-90

FIGURE NO. B02.040.003

REFERENCE ANSI
ASD 6-4-90

ATTACHMENT 1

DUKE POWER CO.
OCONEE - UNIT #1
STEAM GENERATOR 1B
UPPER HEAD TO TUBESHEET: 1SGB-WG58-1

EVALUATION OF INDICATIONS:
FIG. NO. B02.040.003
EVALUATION REPORT NO.: 901-002

INDICATION #200/#402

$t = 8.3" - .25" = 8.05"$
$S = 8.05" - 7.738" = .31"$
$2d = 7.738" - 6.6" = 1.14"$
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$S > .4d$ = SUBSURFACE FLAW
$a = d = .57"$
$l = 6.1"$
$a/l = .57/6.1 = .09$
$a/t = .57/8.05" = 7.1\%$
IWB-3511-1 ALLOWABLE FOR .09 ASPECT RATIO IS 2.88Y a
$Y = S/a = .31/.57 = .544$
$2.88 \times .544 = 1.57\%$ a/t

7.1% a/t > 1.57% a/t = UNACCEPTABLE

INDICATION # 400

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.5" = .45"$

$2d = 7.5" - 7.1" = .4"$

$d = .4"/2 = .2"$

$.4d = .4 \times .2 = .08"$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .2"$

$l = 1.0"$

$a/l = .2/1 = .2$

$a/t = .2/8.05 = 2.5\%$

IWB-3511-1 ALLOWABLE FOR .2 ASPECT RATIO IS 3.6Y a/

$Y = S/a = .45/.2 = 2.25$, IF $Y > 1$, $Y = 1$

2.5% a/t < 3.6% a/t = ACCEPTABLE

INDICATION # 401

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.2" = .805"$

$2d = 7.2" - 6.9" = .3"$

$d = .3/2 = .15"$

$.4d = .4 \times .15 = .06$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .15"$

$l = 1.5"$

$a/l = .15/1.5 = .10$

$a/t = .15/8.05 = 1.9\%$

IWB-3511-1 ALLOWABLE FOR .10 ASPECT RATIO IS 2.9% a/t

$Y = S/a = .805/.15 = 5.37$, IF $Y > 1$, $Y = 1$

1.9% a/t < 2.9% a/t = ACCEPTABLE

M. G Hocken Level III 5-11-90

B&W NUCLEAR TECHNOLOGIES

CALCULATIONAL SUMMARY SHEET (CSS)

DOCUMENT IDENTIFIER 32-1179753-00

TITLE OC-1 OTSG FLAW EVALUATION

PREPARED BY:	REVIEWED BY:
NAME ASHOK NANA	NAME K.K YOON
SIGNATURE A.Nana	SIGNATURE K.K Yoon
TITLE ENGR. IV	DATE 5/31/90
TITLE Mgr. Engrg	DATE 5/31/90
COST CENTER 308	REF. PAGE(S) 12
TM STATEMENT: REVIEWER INDEPENDENCE	NDM

PURPOSE AND SUMMARY OF RESULTS:

Purpose

The purpose of this calculation is to evaluate a flaw indication, found in Oconee Unit 1 Steam Generator 1B, according to the ASME Code Section XI procedure.

Results

The flaw indication is found to be acceptable by evaluation according to the ASME Section XI, IWB-3612 for 120 future heatup/cooldown cycles.

THE FOLLOWING COMPUTER CODES HAVE BEEN USED IN THIS DOCUMENT:

CODE / VERSION / REV	CODE / VERSION / REV
NONE	

THIS DOCUMENT CONTAINS ASSUMPTIONS THAT MUST BE VERIFIED PRIOR TO USE ON SAFETY-RELATED WORK

YES ( ) NO (X)

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

RECORD OF REVISIONS

Revision	Description of Revision	Date
00	Original Release	5/90

PREPARED BY A.D. Nana DATE 5/21/90

REVIEWED BY K.K. Yoon DATE

B&W NUCLEAR SERVICE COMPANY

GENERAL CALCULATIONS

DOC. I.D. 32-1179753-00

TABLE OF CONTENTS

1.0 INTRODUCTION

During the May 1990 inspection, there were a number of flaw indications detected in the tubesheet to head weld regions of the Oconee-1 Steam Generator 1B. The indications are reported in Appendix A. The flaw indications were located in the circumferential weld between the upper head and the tubesheet of the steam generator. The weld is identified in Reference 3 as WG-58 with details given in the enlarged view "X" of Reference 2. The purpose of this analysis is to determine the acceptability of the reported indication that exceeds the IWB-3500 acceptance standards of Reference 4. The flaw indication that requires an evaluation is the combined indications of #200 and #402 as described in Appendix A. Using the stresses from Reference 7, the above indication is evaluated in accordance with the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 4).

2.0 STRESSES

This section summarizes the stresses in the vicinity of the flaw. Per Appendix A, the flaw was detected in the circumferential weld region of the upper head to tubesheet juncture of OTSG-1B.

2.1 Normal/Upset Condition Stresses

The thermal and pressure stresses of the upper tubesheet region is contained in Reference [7]. Since the results are total stresses obtained from the NASTRAN finite element analysis, they have to be linearized. The linearized stresses are shown schematically on Page 3 of Reference 8 and reported below:

Transient	Linearized Stresses in ksi		
	Inside Surface	Outside Surface	Membrane
Heatup	-20.1	28.1	4.0
Cooldown	49.2	-33.6	7.8

Note that the maximum tensile stress occurs at the inside surface during normal cooldown. Since the flaw is located 0.31 inches from the inside surface, the bending stress at the crack tip is 38.2 ksi. This stress value is used in the computation of the acceptable number of heatup/cooldown cycles on the following two pages.

Flaw Location : OTSG 1B Head to Tubesheet, ID# 1SGB-WG 58-1
Indication # : 200 & 402
**** Using Stresses from NASTRAN Model & Linearizing ****

A. Stress Intensity Factor Calculation for an Elliptical Subsurface Flaw

Flaw Geometry Input :

Wall Thick.,(t)	=	8.05 in.
Distance, S	=	0.31 in.
Flaw depth, a	=	0.57 in.
Flaw length, l	=	6.1 in.
Eccentricity, e	=	3.145 in.

For Normal and Upset Condition :

Maximum Stress State :- Decay Heat Trans.

Membrane Stress, SIGm	=	7.8 ksi			
Bending Stress, SIGb	=	38.2 ksi			
Yield Strength, SIGys	=	50 ksi			
a/l	=	0.09	2a/t	=	0.14
(SIGm + SIGb)/SIGys	=	0.92	2e/t	=	0.78

From Appendix A, Section XI, ASME B&PV Code :

Q	=	0.9 (Fig. A-3300-1)
Mm	=	1.1 (Fig. A-3300-2)
Mb	=	0.89 (Fig. A-3300-4)

KI(ai) = 60.1 ksi sqrt.in

B. Fatigue Flaw Growth Analysis:
For delta KI determination :
Normal and Upset Condition :

No.of Cycles (N) = 120 (assumed)

Membrane Stress, SIGm ;

Due to Heatup	=	4 ksi
Due to Cooldown	=	7.8 ksi
Delta SIGm	=	7.8 ksi

Bending Stress, SIGb ;

		Inside	Outside
Due to Heatup	=	-22.2 ksi	22.2 ksi
Due to Cooldown	=	38.2 ksi	-38.2 ksi
Delta SIGb	=	60.4 ksi	

From Fig.A-4300-1
For Subsurface Flaws
(air environment) ;

C = 2.7E-11
n = 3.726
da/dN = c(Delta KI)^n

Delta KI = (D1 + D2)*Sqrt.(ai)
where ;
D1 = 16.0 (Delta SIGm * Mm * Sqrt.(pi/Q))
D2 = 100.4 (Delta SIGb * Mb * Sqrt.(pi/Q))
D1 + D2 = 116.5
Delta KI= 87.9 ksi sqrt.in
da/dN = C*(Delta KI)^n
da/dN =0.000468 in/cycle; C = 2.7E-11 ; n = 3.726

The final crack size, af, in terms of initial crack size, ai, and above constants ;
af = [ai^B + B*C*(D1+D2)^n * N]^(1/B)
where ;
ai = 0.57 in.
B = -0.863 (1 - n/2)
af = 0.632 in.

Calculating KI based on final flaw size ;

KI(af) = 63.2 ksi sqrt.in.

C. Safety Factor Assesment :
Material Fracture Toughness:
Per Fig. 3.0-2 of Ref.[6], since oper. temp. > 250 F
(Worst Case HU/CD Transient - CD Trans. 1B2 @ 3.125 hrs.)
KIa(250) = 200 ksi sqrt. in. (See Section 3.0)

For Normal/Upset Condition, per IWB-3612,
KIa/KI > sqrt.10 = 3.16
KIa/KI(af) = 3.16
Therefore, this flaw is acceptable for 120 future cycles.

2.2 Emergency and Faulted Loading Condition Stresses

The stresses due to the emergency/faulted condition, for the upper head to tubesheet weld region are reported in Section 2.4 of Reference 5. The stresses for this loading category are obtained by superimposing the stresses due to LOCA (loss of coolant accident) with the maximum primary pressure stresses of 2566 psi to include the effects of MSLB (main steam line break) and FWLB (feedwater line break) events. The linearized stresses are summarized below:

Transient	Longitudinal stress (ksi)			
	Inside	Outside	Membrane	Bending
LOCA	52.0	-30	11.0	+/-11.0
Pressure (2566psi)	29.2	-11.3	9.0	+/-20.2

The membrane plus bending stress at the crack tip corresponds to 28 ksi due to pressure(2566 psi) and 49 ksi due to LOCA. Therefore, conservatively assume the membrane stress to be 20 ksi and the rest of the stress at the crack tip as bending i.e. 77 - 20 = 57 ksi. These stresses will be used in the KI calculation on the following page.

Flaw Location : OTSG 1B Head to Tubesheet, ID# 1SGB-WG 58-1
Indication # : 200 & 402
**** Using Stresses from NASTRAN Model & Linearizing ****

A. Stress Intensity Factor Calculation for an Elliptical Subsurface Flaw

Flaw Geometry Input :

Wall Thick.,(t)	=	8.05 in.
Distance, S	=	0.31 in.
Flaw depth, a	=	0.57 in.
Flaw length, l	=	6.1 in.
Eccentricity, e	=	3.145 in.

For Emergency and Faulted Condition :

Maximum Stress State :-

Membrane Stress, SIGm	=	20 ksi			
Bending Stress, SIGb	=	57 ksi			
Yield Strength, SIGys	=	50 ksi			
a/l	=	0.09	2a/t	=	0.14
(SIGm + SIGb)/SIGys	=	1.54	2e/t	=	0.78

From Appendix A, Section XI, ASME B&PV Code :

Q	=	0.8 (Fig. A-3300-1)
Mm	=	1.1 (Fig. A-3300-2)
Mb	=	0.89 (Fig. A-3300-4)

KI(af) = 108.8 ksi sqrt.in

As indicated previously in this Section
KIc = 200 ksi sqrt.in (See Section 3.0)

For Emergency nd Faulted Condition, per IWB-3612,

KIc/KI > sqrt. 2 = 1.414

KIc/KI(af) = 1.838

Therefore, this flaw is acceptable for Emergency & Faulted Cond

3.0 Fracture Toughness Determination

The maximum tensile stress at the upper head to tubesheet juncture occurs during the cooldown at 15% power (3.125 hrs into the transient) when the RCS temperature is 250 F. Note that it is the stresses due to this cooldown transient that is evaluated in Section 2.0. This transient is illustrated in Figure 3.0-2 on Page 3-11 of Reference 6.

For the SG shell there is no appreciable fluence cummulation, hence,

RT_{NDT} = initial RT_{NDT}
= 60°F (assumed)

$T - RT_{NDT} = 250-60 = 190°F$

From Fig. A-4200-1 of Ref. 4, K_{Ia} = 200 ksi $\sqrt{in}$.

For the Emergency and Faulted Condition, the RCS temperature when the pressure is at 2566 psi is significantly greater than 250 F and the minimum RCS temperature during the emergency and faulted condition events is greater than 250 F. Therefore, KIc is also 200 ksi$\sqrt{in}$ per Fig. A-4200-1.

4.0 Conclusion

The combined indication (200 & 402) evaluated in this document is found to be acceptable for 120 future heatup/cooldown cycles (since May 1990) per the IWB-3612 criteria.

5.0 References

1. Not used.

2. B&W Drawing 02-129316E-9, "Assy. and Detail of Upper Head". (NSS-3).

3. B&W Drawing 02-129312E-13, "Shell and Tubesheet Attachment Assembly". (NSS-3).

4. ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition through Winter 1980 Addenda.

5. B&W Document 32-1173627-00, "ANO-1 OTSG Flaw Evaluation", Nov. '88. (For Owners Group OTSG Emergency and Faulted Condition Stresses @ Upper Head to Tubesheet Juncture).

6. B&W Document 32-9811-01, "177 OTSG Minimum Tube Wall Thickness", Nov. 1979.

7. B&W Document 32-1134568-00, "OTSG Stresses - Heatup, Cooldown, Loca", July 1982.

8. B&W Document 32-1153946-00, "ISI Flaw Evaluation, Steam Generator Upper Head to Tubesheet", Nov. 1984.

6.0 Appendix A

The following is the Volumetric Examination Evaluation Report that contains flaw indications, in the upper head to tubesheet region of Oconee Unit-1 OTSG-1B, found during the May 1990 inspection.

Babcock & Wilcox
a McDermott company

VOLUMETRIC TEST DATA

CUSTOMER: DUKE POWER CO. OCONEE UNIT 1	CONTRACT NO.: 702-2034	COMPONENT: STEAM GEN. 1B (VESSEL)
DESCRIPTION: STEAM GEN. 1B (UPPER HEAD TO TUBE SHEET. PC 8 TO 51)		THERMOMETER: OCQA-223
I.D. NO.: 1SGB-WG58-1	PROCEDURE: ISI-130 REV. 24	MATERIAL: C/S THICKNESS: 8.5" TEST SURF.: OD

NO. POSITIONS: 36	DISTANCE: 12.0"	NO. I REFERENCE: 20
BEAM DIRECTION: ☐ LONG ☑ SHEAR	LIMITED EXAM: ☐ NO ☑ YES ?	
EXAMINER: DJ Moss / D.C. Robinson	I.D. NO.: M-8280 / R-9615	LEVEL: II
EXAMINER: J W Sitzer / [illegible]	I.D. NO.: 89449 / S-5643	LEVEL: II

CAL SHEET:	901023	901010	901011	
ANGLE:	0	45	60	N/A
TIME START:	1242 HR.	1830 HR.	1230 HR.	HR.
TIME STOP:	1457 HR.	2020 HR.	1830 HR.	HR.
PART TEMP.:	88 °F	88 °F	88 °F	°F
DATE:	5-6-90	5-6-90	5-6-90	

NOTES: INDICATION 200 MEAS. TAKEN FROM TUBE SHT TAPER
#1 REF. STARTS AT X-AXIS
old data states W-AXIS
No MAX TWD DIMENSION WAS OBTAINABLE DUE to THE GEOMETRY WHERE THE HEAD RADIUS STARTS (402) ONLY

1ST SCAN	N/A
2ND SCAN	N/A
60° REQUIRED	✓
60° NOT REQUIRED	

CAL BLK: 40305
DWG NO.: OM-201-1893 / ISI-OCNI-004
FCA(S): CAT. 89.006

WELD INFORMATION & 0° THICKNESS

SURFACE NO. 2		SURFACE NO. 1
TUBE SHEET	HTH: FLUSH	UPPER HEAD
	WD: 4.0"	
	℄: 8.44	
BM: N/A	MIN: 8.3	BM: 9.045
HAZ: N/A	MAX: 8.6	HAZ: 8.743

INDICATION NO(S)	POSITION OR PART ITEM A	POSITION OR PART ITEM B	ANGLE (DEGREES)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX. AMP. %DAC	LAM. DEPTH (INS)	LGTH 20%	WDTH 50%/HMA	100%	CRYSTAL DISTANCE FROM (INCHES) A	CRYSTAL DISTANCE B	CRYSTAL DISTANCE 1	CRYSTAL DISTANCE 2	TWD MINIMUM DEPTH	MIN POSITION (INCHES) 1 A	MIN POSITION (INCHES) 2 B	TWD MAXIMUM DEPTH	MAX POSITION (INCHES) 1 A	MAX POSITION (INCHES) 2 B	DAMPS	REMARKS
	360°		0°			No	RECORDABLE			INDICATIONS													
200	27 to 28		45°	1	2	SEP.	282	7.437		6.1			5.4		10.75	7.135		10.15	7.638		11.2	No	
							50	7.437					1.6		10.5								50% EP
							50	7.337					7.7		10.5								50% EP
							224	7.235					4.5		10.3	7.135		10.0	7.738		11.0	No	
							224	7.537					3.6		10.6	7.135		9.9	7.737		10.8	No	
							125	7.235					2.7		10.5	7.235		10.2	7.738		11.0	No	
							50	7.235					1.8		10.5	7.135		10.0	7.638		11.0	No	
							125	7.538					6.3		10.5	7.135		10.0	7.537		10.9	No	
							50	7.336					7.2		10.5	7.135		10.2	7.537		11.0	No	
	360°		45°			No	OTHER		RECORDABLE		INDICATIONS												

REVIEWED BY: Howard Stoppelman   LEVEL: II   DATE: 8 MAY '90   FIGURE NO.: B02.040.003

ANGLE	0 DEG.	45 DEG.	60 DEG.	OTHER
IND. NOS.	1 TO 199	200 TO 399	400 TO 599	600 TO 799

E.R. REQUIRED: ☑ YES ☐ NO   E.R. NUMBER: 901-002

PAGE 1 OF 8

BABCOCK & WILCOX

VOLUMETRIC TEST DATA FORM 101

BWNP-20531-3 (10-84)

CUSTOMER: DUKE POWER CO. OCONEE I | CONTRACT NO: 702-2034 | COMPONENT: VESSEL SGB

EXAMINER: J.W. Setzer | ID: S-5643 | LEVEL II | DATE(S): 5-6-90

EXAMINER: A Bill | ID: B-9449 | LEVEL II

IND. NO.	POSITION OR PART ITEM	ANGLE (DEG)	SURFACE	BEAM DIRECTION	STATUS	LAM. MAX AMP % DAC	LAM. DEPTH (IN.)	LNGTH 20%	WDTH 50% OR RMA	WDTH 100%	(INCHES) CRYSTAL DISTANCE FROM A	B	1	2	THROUGH WALL DIMENSION MINIMUM DEPTH	MIN POSITION IN. 1 A	MIN POSITION IN. 2 B	MAXIMUM DEPTH	MAX POSITION IN. 1 A	MAX POSITION IN. 2 B	DAMPS	REMARKS
								LENGTH														
400	25 to 27	60	1	2	SEP	125	7.3		1.0			12.0		12.6	7.1		12.0	7.5		13.1	NO	
						50	7.4					11.6										
						50	7.3					12.6										
401	20 to 21	60	1	2	SEP	80	7.1		1.5			2.5		12.0	6.9		11.5	7.2		12.1	NO	
						50	7.1					2.0										
						50	7.1					3.5										
402	27 to 28	60	1	2	SEP	251	6.8		4.4			5.1		13.2	6.6		12.9				NO	
						50	6.8					2.8		13.2								
						50	6.8					7.2		13.2								
						251	6.8					3.7		13.2	6.6		12.9					SEE NOTES
						251	6.8					4.6		13.2	6.6		12.9					
						200	6.8					5.5		13.2	6.6		12.9					
						159	6.8					6.4		13.2	6.6		12.9					
	360°	60		NO	OTHER RECORDABLE INDICATIONS																	

REVIEWED BY: Howard Stoppelmann | LEVEL: II | DATE REVIEWED: 8 MAY '90 | FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: 1
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: 1SGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☑ A ☐ B
BETWEEN POINTS 3 AND 5 . 8.5 INCHES FROM POINT 3 TO 8.5
INCHES FROM POINT 5 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scub in Shipping Tie Down Removal Area

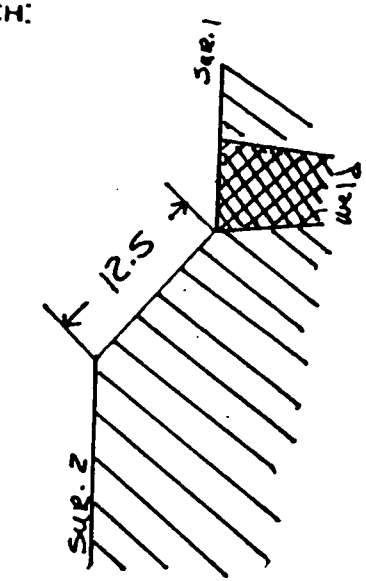
☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS ____ AND ____ . ____ INCHES FROM POINT ____ TO ____
INCHES FROM POINT ____ . ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☑ A ☑ B
360 DEGREES. 3.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Taper on Tube sheet Area

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:



SEE ATTACHMENT NO(S): ____

REVIEWED BY: [signature] LEVEL: II DATE: 8 MAY '90

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: 1
CONTRACT NO.: 702-2034
COMPONENT: Steam Generator, I.D. NO.: 1SGB-WG58-1

TEST METHOD: U.T.

BWNP (7-87)

☑ NO SCAN ☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 34 . 0.0 INCHES FROM POINT 33 TO 2.0
INCHES FROM POINT 34 . 10 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Scab in shipping tie Down Removal AREA

☑ NO SCAN ☐ LIMITED SCAN
SURFACE ☑ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☑ 2 ☐ A ☐ B
BETWEEN POINTS 35 AND 3 . 5.0 INCHES FROM POINT 35 TO 5.0
INCHES FROM POINT 3 . 19.5 INCHES FROM WELD ℄ TO beyond ~~INCHES FROM WELD ℄~~
ANGLE(S) ☑ 0° ☑ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: MANWAY

☐ NO SCAN ☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

☐ NO SCAN ☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
_____ DEGREES. _____ INCHES FROM WELD ℄ TO _____ INCHES FROM WELD ℄
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: _____

NOTES:

SKETCH:

SEE ATTACHMENT NO(S): _____

REVIEWED BY: Howard Stoppelman LEVEL: II DATE: 8 MAY '90

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 58-1

TEST METHOD: UT

BWNP (7-87)

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 26 AND 30 . 6 INCHES FROM POINT 26 TO 6
INCHES FROM POINT 30 . 15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: Support Pad

☑ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☑ 2
BEAM DIRECTION ☑ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 4 AND 5 . 3.5 INCHES FROM POINT 4 TO 6.5
INCHES FROM POINT 5 . 8.5 INCHES FROM WELD ℄ TO 11.5 INCHES FROM WELD ℄
ANGLE(S) ☑ 0° ☐ 45° ☑ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: 1 1/2" ø Vent Conn.

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/a
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
n/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES: ____

SKETCH:

SEE ATTACHMENT NO(S): ____

REVIEWED BY: Howard Hagopian, LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS AND INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: I
CONTRACT NO.: 702-2034
COMPONENT: STEAM GEN B, I.D. NO.: 1SGB-WG 58-1

TEST METHOD: UT

BWNP (7-87)

☒ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☒ 2
BEAM DIRECTION ☒ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 12 AND 16. 6 INCHES FROM POINT 12 TO 6 INCHES FROM POINT 16. 15 INCHES FROM WELD ℄ ~~TO ____ INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☒ 0° ☐ 45° ☒ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☒ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☒ 2
BEAM DIRECTION ☒ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 19 AND 23. 6 INCHES FROM POINT 19 TO 6 INCHES FROM POINT 23. 15 INCHES FROM WELD ℄ ~~TO ____ INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☒ 0° ☐ 45° ☒ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
N/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO:

☐ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
NA
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO:

NOTES:

SKETCH:

SEE ATTACHMENT NO(S).:

REVIEWED BY: Howard Stapleman LEVEL: II DATE: 8 MAY '90

FIGURE NO.: B02.040.003

Babcock & Wilcox
a McDermott company
SPECIAL PRODUCTS
AND
INTEGRATED FIELD SERVICE

ISI, LIMITED EXAMINATIONS

CUSTOMER: DUKE POWER COMPANY, SITE: OCONEE, UNIT: 1
CONTRACT NO.: 702-2034
COMPONENT: SG B, I.D. NO.: 1SGB-WG58-1

TEST METHOD: UT

BWNP (7-87)

☒ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☒ 2
BEAM DIRECTION ☒ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 33 AND 2.7 INCHES FROM POINT 33 TO 6
INCHES FROM POINT 2.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND.
ANGLE(S) ☒ 0° ☐ 45° ☒ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

☒ NO SCAN
☐ LIMITED SCAN
SURFACE ☐ 1 ☒ 2
BEAM DIRECTION ☒ 1 ☐ 2 ☐ A ☐ B
BETWEEN POINTS 5 AND 9.6 INCHES FROM POINT 5 TO 6
INCHES FROM POINT 9.15 INCHES FROM WELD ℄ ~~TO~~ ~~INCHES FROM WELD ℄~~ AND BEYOND
ANGLE(S) ☒ 0° ☐ 45° ☒ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: SUPPORT PAD

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
N/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

~~☐ NO SCAN~~
☐ LIMITED SCAN
SURFACE ☐ 1 ☐ 2
BEAM DIRECTION ☐ 1 ☐ 2 ☐ A ☐ B
____ DEGREES. ____ INCHES FROM WELD ℄ TO ____ INCHES FROM WELD ℄
N/A
ANGLE(S) ☐ 0° ☐ 45° ☐ 60° ☐ __° ☐ __° ☐ __° ☐ N/A
DUE TO: ____

NOTES:

SKETCH:

SEE ATTACHMENT NO(S).: ____

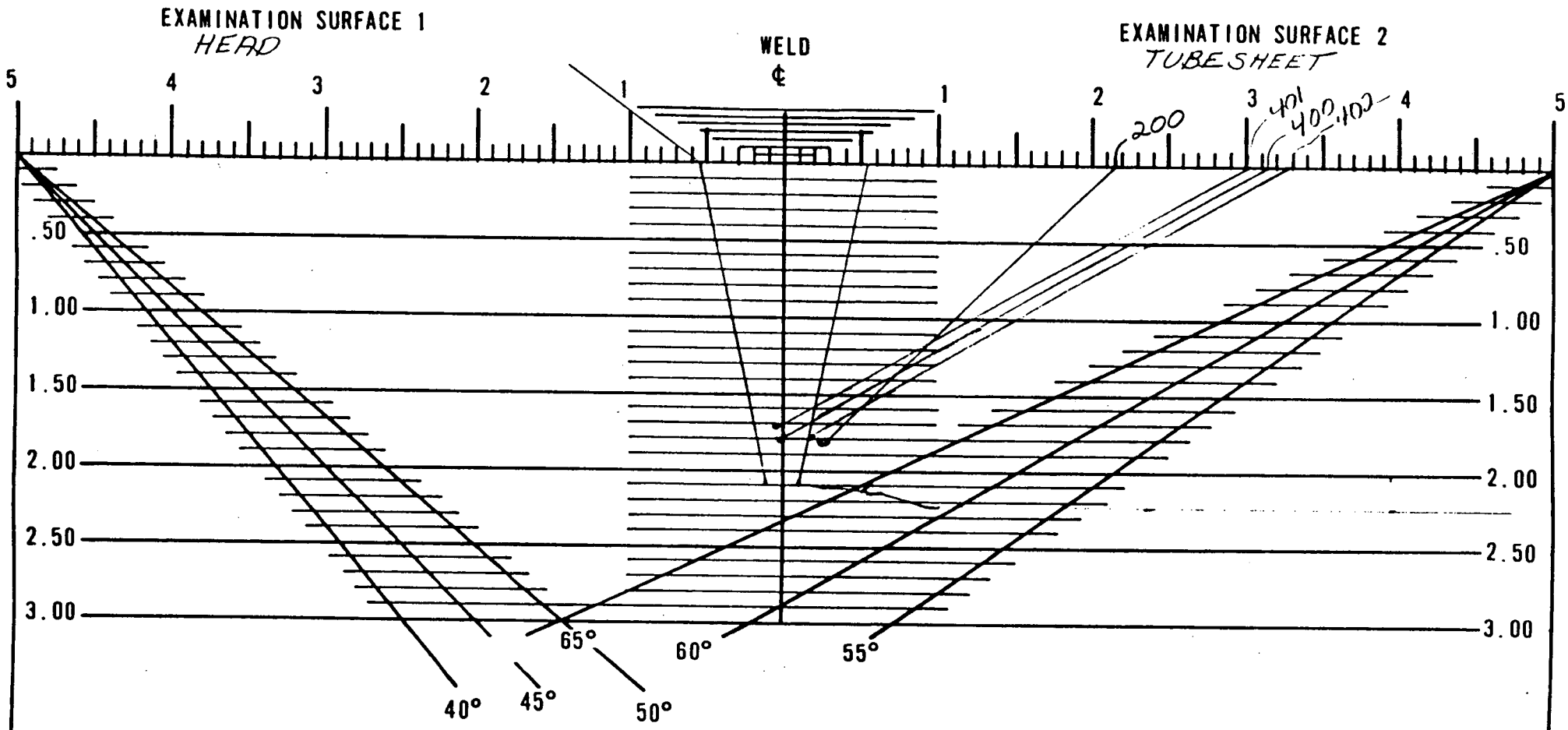
REVIEWED BY: Howard Hazelwood LEVEL: II, DATE: 8 MAY '90
REVIEWED BY: TITLE: DATE:

FIGURE NO.: B02-040.003

BABCOCK & WILCOX
UTILITY POWER GENERATION DIVISION

INDICATION PLOT SHEET

BWNP 2 1(5-83)

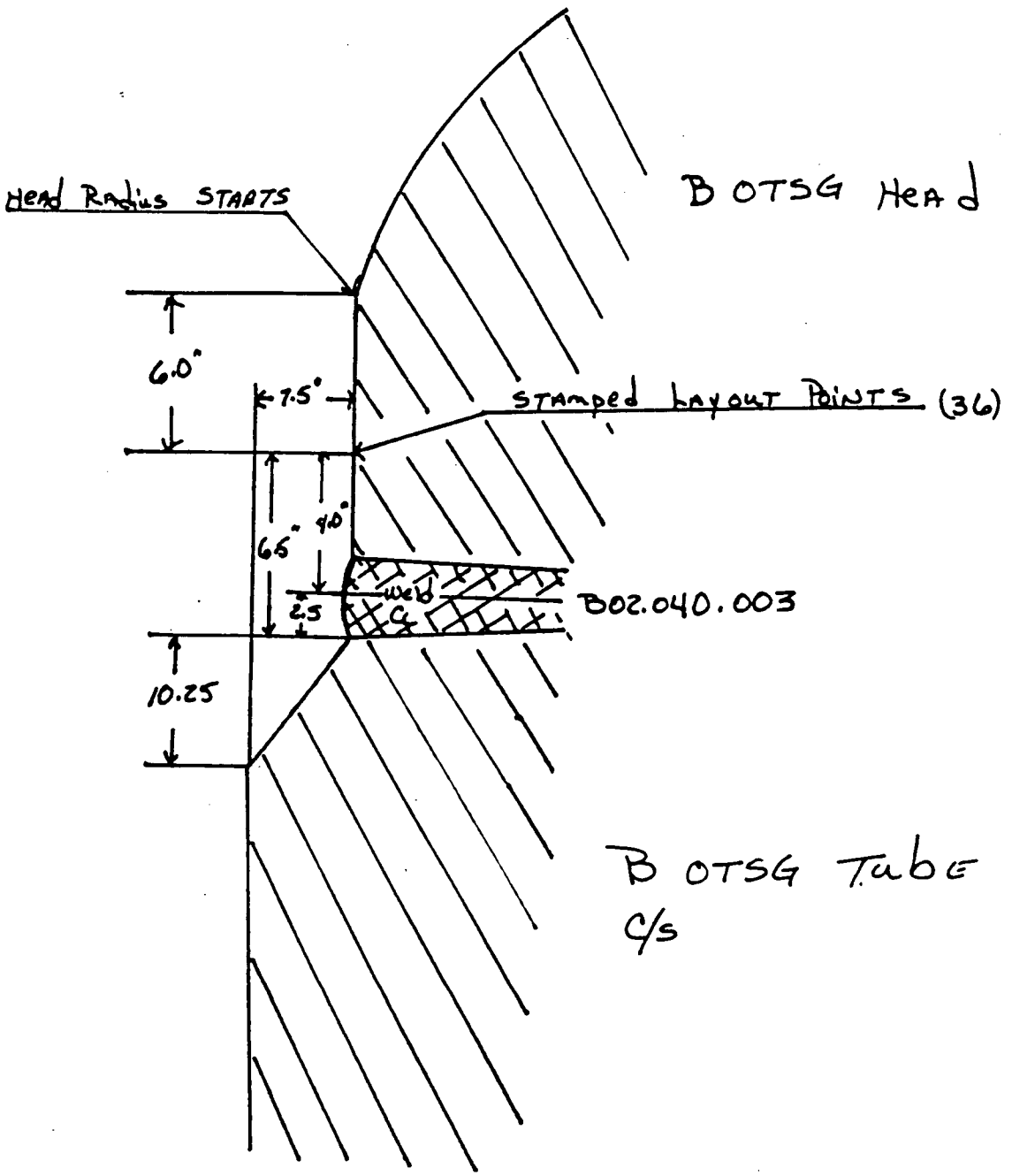


COMMENTS:

☐ GEOMETRIC ☐ REPORTABLE

CUSTOMER:	DUKE POWER CO OCONEE 1
PROJECT NO:	702-2034
WELD NO:	1SGB-WG 58-1
ANALYST:	
SNT LEVEL:	
DATE:	
FIGURE NO:	B02.040.003

ATTACHMENT TO B02.040.003



D. C. Robinson

5-7-90

B&W NUCLEAR TECHNOLOGIES

DOCUMENT RELEASE NOTICE (DRN)

Release Date

Records Mgmt. Initials

CONTRACT NO. 702-2034 | PLANT Oconee Unit 1 | CHARGE NO.

Page 1 of 1

3-DIGIT TASK NO., PART NO., OR TASK-GROUP-SEQ.	B&W DOCUMENT NO.	DOCUMENT TITLE (30 Characters Maximum)	SAFETY CLASS (OMIT FOR NSS-15, 16 & 23)	PUL STAT (Y/N)	COM ATT? (Y/N)
140	32-1179753-00	OC-1 OTSG Flaw Evaluation	S	N	N
		Keywords : Fracture Mechanics, Flaw Evaluation, OTSG, LEFM.			

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PROJECT ENGINEER/PM APPROVAL:

(SIGNATURE) _____ DATE _____

(PRINTED NAME)

RELEASED BY (PREPARER):

(SIGNATURE) A.D Nana 5/31/90 DATE

(PRINTED NAME) ASHOK NANA

REVIEWED BY:

(SIGNATURE) K K Yoon 5/31/90 DATE

(PRINTED NAME) K. K. YOON

ATTACHMENT 1

DUKE POWER CO.
OCONEE - UNIT #1
STEAM GENERATOR 1B
UPPER HEAD TO TUBESHEET: 1SGB-WG58-1

EVALUATION OF INDICATIONS:
FIG. NO. B02.040.003
EVALUATION REPORT NO.: 901-002

INDICATION #200/#402

$t = 8.3" - .25" = 8.05"$
$S = 8.05" - 7.738" = .31"$
$2d = 7.738" - 6.6" = 1.14"$
$d = 1.14"/2 = .57"$
$.4d = .4 \times .57 = .23"$
$S > .4d$ = SUBSURFACE FLAW
$a = d = .57"$
$l = 6.1"$
$a/l = .57/6.1 = .09$
$a/t = .57/8.05" = 7.1\%$
IWB-3511-1 ALLOWABLE FOR .09 ASPECT RATIO IS 2.88Y
$Y = S/a = .31/.57 = .544$
$2.88 \times .544 = 1.57\%$ a/t

7.1% a/t > 1.57% a/t = UNACCEPTABLE

INDICATION # 400

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.5" = .45"$

$2d = 7.5" - 7.1" = .4"$

$d = .4"/2 = .2"$

$.4d = .4 \times .2 = .08"$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .2"$

$l = 1.0"$

$a/l = .2/1 = .2$

$a/t = .2/8.05 = 2.5\%$

IWB-3511-1 ALLOWABLE FOR .2 ASPECT RATIO IS $3.6Y$ a,

$Y = S/a = .45/.2 = 2.25$, IF $Y > 1$, $Y = 1$

$2.5\%\ a/t < 3.6\%\ a/t$ = ACCEPTABLE

INDICATION # 401

$t = 8.3" - .25" = 8.05"$

$S = 8.05" - 7.2" = .805"$

$2d = 7.2" - 6.9" = .3"$

$d = .3/2 = .15"$

$.4d = .4 \times .15 = .06$

$S > .4d$ = SUBSURFACE FLAW

$a = d = .15"$

$l = 1.5"$

$a/l = .15/1.5 = .10$

$a/t = .15/8.05 = 1.9\%$

IWB-3511-1 ALLOWABLE FOR .10 ASPECT RATIO IS 2.9Y a/t

$Y = S/a = .805/.15 = 5.37$, IF $Y > 1$, $Y = 1$

1.9% a/t < 2.9% a/t = ACCEPTABLE

M. G Hocken Level III 5-11-90

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: Oconee

Unit: 1,2 and 3

Requesting Department: Quality Assurance, Inservice Inspection

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI 1980 Edition through Winter 1980 Addenda

1. Component for which exemption is requested:

   a. Name and Identification Number:

      Main Steam Turbin Stop Valve Upper Head to Valve Body Studs.
      Valve Manual OM-200-195

   b. Function: Pressure retaining bolting of upper head to valve body

   c. ASME Section XI Code Class: Class 2

   d. Construction Code and Class: ANSI (USAS) B31.1, Class F

   e. Valve Category: Category A

II. Reference Code Requirement that has been determined to be impractical:

   Table IWC-2500-1; Category C-D; Item C4.40
   Volumetric Examination requirements of figure number IWC-2500-6

III. Basis for Requesting Relief:

ASME Section XI, IWC2500-6 requires that the full volume of the thread portion of the stud be examined. This request for relief is on the premise that even though the code requires a volumetric examination of the entire length of the stud, the actual areas of concern would be the thread run-out points, where the threads meet the body of the stud; the first three to four threads that engage the nut.

The Design Engineering Department of Duke Power Co. performed an evaluation to support this request. It was concluded that the last 2.9" of the stud that is engaged in the valve body would not have any significant load that would lead to the stud's failure (see Certification of Engineering Calculation No. OSC-3369 attached to this request.)

The stud manufacturer, General Electric (GE), in their document "Valve Studs-Tighting, Inspection & Replacement Recommendations (TIL-891)", states;" The results obtained to date indicate that crack indications will appear at the first or second thread, 0-1/4 inch below the valve joint surface..." (See page 16 of Certification of Engineering Calculation No. OSC-3369 for this statement).

IV. Alternate Examination:

Article 5 of ASME Section V, Paragraph T-541.5 specifies the ultrasonic examination be performed from the end of the bolt. Calibration shall be established from a 3/8" diameter, 3"long, flat bottom hole drilled in the end of the calibration standard(s) with dimensions as identified in Table 541.5.2. Configuration of the Main Steam Upper Head Studs on the Turbine Stop Valve prevents this technique from being properly utilized.

The Main Steam Turbine Stop Valve Upper Head Stud is configured with a .620" diameter heater hole that runs 11.13" of the length of the stud. An in-place examination using an ultrasonic angle beam transducer can be performed from the heater hole.

ASME Section XI 1983 winter addenda specifies that a procedure qualification be performed in accordance with Paragraph VI-2430. The sensitivity of the examination shall be established using a qualification specimen with notches of dimensions that are specified in Table VI-2430-1. The ultrasonic examination specified in Article 5 of ASME Section V, Paragraph T-541.5 can not be performed using that calibration block design. However, an angle beam examination has been established using the qualification specimen design identified in the

ASME Section XI 1983 winter addenda, Paragraph VI-2430. This technique is an in-place examination that employs a 45 degree angle beam transducer through the heater hole. It is capable of detecting cracks from the top of the stud to the last two threads engaged in the valve body. This is approximately 1.5" beyond the critical area identified in the Certification of Engineering Calculation No. OSC-3369.

V. Implementation Schedule:

This examination is scheduled to be performed during the current (10th)refueling outage for Oconee Unit 2 during the period from May 19, 1989 to July 2, 1989. For Oconee Units 1 and 3 these examinations are scheduled to be performed during upcoming outages 12 and 11 respectively.

February 3, 1989 MOEE-89-052

G. W. Grier, Manager
Quality Assurance

Attention: A. C. Gladney

Re: ISI of Turbine Stop Valve
Request for Relief
File: OS-27-M

This is in response to your letter of November 30, 1988 on the above subject.

Based on our evaluation which is documented in our calculation OSC-3369, we support your request for relief. It is our judgement that as long as your proposed UT procedure cover the threads between points B and C on our sketch OSC-3369, we will have inspected the critical threads on the valve end of the stud.

For your records, attached is a copy of our calculation OSC-3369. Please advise if we may be of further help.

B. L. Peele, Jr., Division Project Manager
Oconee Engineering Division

R. L. Williams

By: R. L. Williams
Engineering Consultant

RLW/acb

Attachment

cc w/o att: Central Records

Form 01077 (R3-88)

FORM 101.1	REVISION 11

CERTIFICATION OF ENGINEERING CALCULATION

STATION AND UNIT NUMBER Oconee Units 1-3

TITLE OF CALCULATION Main Steam Turbine Stop Valve Upper Head Stud

CALCULATION NUMBER OSC-3369

ORIGINALLY CONSISTING OF:

PAGES 1 THROUGH 2

TOTAL ATTACHMENTS 3 TOTAL MICROFICHE ATTACHMENTS —

TOTAL VOLUMES 1

THESE ENGINEERING CALCULATIONS COVER QA CONDITION 1 ITEMS. IN ACCORDANCE WITH ESTABLISHED PROCEDURES, THE QUALITY HAS BEEN ASSURED AND I CERTIFY THAT THE ABOVE CALCULATION HAS BEEN ORIGINATED, CHECKED OR APPROVED AS NOTED BELOW:

ORIGINATED BY R. L. Williams DATE 1/10/89

CHECKED BY H. D. Robison DATE 1/16/89

APPROVED BY R A Ham DATE 2/2/89

ISSUED TO GENERAL SERVICES DIVISION _____ DATE _____

RECEIVED BY GENERAL SERVICES DIVISION _____ DATE _____

MICROFICHE ATTACHMENT LIST: ☐ Yes ☒ No SEE BACK OF FORM

REV. NO.	CALCULATION PAGES (VOL)			ATTACHMENTS (VOL)			VOLUMES		ORIG	CHKD	APPR	ISSUE DATE
	REVISED	DELETED	ADDED	REVISED	DELETED	ADDED	DELETED	ADDED	DATE	DATE	DATE	REC'D DATE

Form 00184 (6-81)

Dev./Station Oconee Unit 1-3 File No. OSC-3369

Subject Main Steam Turbine Stop Valve Upper Head Stud By R.L. Wilson Date 1/10/89

Sheet No. 1 of 3 Problem No. Checked By G.D. Robison Date 1/16/89

PROBLEM

The Q.A. Department is in the process of developing a procedure to do the ISI of the Main Steam Stop Valve Upper Head Studs in place. This valve is Q.A Condition 1 and the requirements of ASME SECTION XI, 1980 Edition through W'80 Addenda apply.

Q.A has evaluated the situation and plans to seek relief from the 100% UT requirement imposed by ASME Section XI. They are asking for Design Engineering review and concurrence with their plan of action. For further detail, see A.C. Gladney's letter of Nov. 30, 1988 and its attachments (Attachment No. 1 to this Calculation).

ASSUMPTIONS

Sketch OSC-3369 (Attachment No. 2 to this Calculation) shows the general dimensions and configuration of the upper head stud. This sketch is based on field measurements furnished by Q.A. (Attachment No. 3 to this Calculation). For the purpose of this evaluation, we are assuming that:

- The portion of the stud between points B and D are screwed into the valve body.
- UT will be performed by inserting a 45° transducer into the stud through the .620"ø hole at end A.
- The transducer will traverse the I.D. of the stud from point A to C.
- This will give UT coverage from point A through C.
- Q.A. will be seeking relief from the UT of the portion of the stud from approximate point C to D.
- The material is ferritic and stamped "1" per GE TIL.

Dev./Station Oconee Unit 1-3 File No. OSC-3369

Subject: Main Steam Turbine Stop Valve Upper Head Stud

By R. L. Williams 1/10/89

Sheet No. 2 of 3 Problem No. Checked By G. D. Robison 1/16/89

REFERENCES

1. ASME SECTION XI, 1980 Edition through W'80 Addenda Rules for Inservice Inspection of Nuclear Power Plant Components.
2. "An Introduction to the Design and Behavior of Bolted Joints" © 1981, 5th Printing by John H. Bickford.

EVALUATION

No specific information such as material properties is available for a numerical analysis of the stud. Our evaluation will therefore be based on the past history of similar studs and the normally expected behavior of threaded fasteners.

From the UT procedure included in TIL-891, we find that the cracking found to date in similar studs, occurs in the vicinity of the 1st. or 2nd. thread. This is 0" to .250" from point B on Sketch OSC-3369. This is expected since the juncture of a fastener pair is subject to the highest loads and moments.

From reference No. 2 we find that:

- The first 3 threads carry most of the load.
- The tensile stress in the bolt falls off rapidly as it gets further into the internally threaded part. At a distance into the part equal to about half of the bolt diameter, the tensile stress ~~is less than ½ the~~ in the unthreaded shank of the bolt. In this case, the half diameter insertion depth is

$$\frac{2.230"}{2} = 1.115"$$

Dev Sys: Oconee Unit 1-3 File No. OSC-3369

Subject: Main Steam Turbine Stop Valve Upper Head Stud

By R.L. Williams 1/10/89

Sheet No. 3 of 3 Problem No. Checked By G.D. Robison 1/16/89

CONCLUSIONS

The proposed UT should cover the area that has contained any cracks found in similar studs. It should also cover the area over which the stud will have any significant loading. The area in which Q.A. seeks relief from the UT requirement is a relatively low stress area and any indications which might exist should not propagate.

∴ Design Engineering can support Q.As. request for relief.

Att. No. 1
Calc. OSC-3369
Pg. 1 of 21

November 30,1988

R L Williams

Re: Request For Design Engineering Support in the Examination of the Main Steam Turbine Stop Valve Upper Head Stud at Oconee Unit #1

This memorandum is a follow-up on our discussion, November 28, on the ultrasonic examination of the main steam turbine stop valve upper head studs. In that discussion I identified that QA would need the support of Design Engineering in two areas:

1) Support documentation for a request for relief
2) A design approved drawing of the upper head stud

The request for relief is on the premise that even though it is a code reqiures a volumetric examination of the entire length of the stud, the actual areas of concern would be the thread run-out points, where the threads meet the body of the stud; the first three to four threads that engage the body of the valve, and the first three to four threads that engage the nut. The stud manufacturer, General Electric (GE), in their document "Valve Studs-Tighting, Inspection & Replacement Recommendations (TIL-891), states; " The results obtained to date indicate that crack indications will appear at the 1st or 2nd thread, 0-1/4 inch below the valve joint surface..."
I am attaching a copy of this document for your information.

The drawing is for support documentation of the calibration standard. GE will not provide a drawing that specifies the dimensions of the stud. This type of information proprietory. Jack Packard, my contact at GE, feels he may be allowed to approve a Duke Power drawing of the stud as a courtesy. For your information, a copy of this phone conversation is also attached.

Att. No. 1
Calc. OSC-3369
Pg. 2 of 21

I am requesting that the support documentation and drawing be provided by December 7, 1988. If I can be of any assistance in expediting the matter, please contact me at your convienence at 373-4842. An alternative contact will be Carl Freeman at Oconee. His number is 882-2406.

A C Gladney
NDE Level III
QA Technical Services

ACG
Attachments

cc w/o attachments
E B Miller
C B Cheezem

cc w/attachments
T L Tucker
Carl Freeman-ONS

- A. J. Grunsky letter of Feb. 29, 1980
- G.E. TIL - 891-3 dated Dec. 20, 1979
- Telephone Conversation Record File No. UT-88-8

Att. No. 1 Calc. OSC-3369 Pg. 3 of 21

DUKE POWER COMPANY

STEAM PRODUCTION DEPT.
GENERAL OFFICES
422 SOUTH CHURCH STREET
CHARLOTTE, N. C. 28242

P. O. BOX 33189

TELEPHONE: AREA 704
373-4011

February 29, 1980

ALL STATION MANAGERS

Attention: Superintendents of Maintenance

Subject: General Electric Company
TIL 891-3
"Valve Studs-Tightening, Inspection and Replacement Recommendations"
GS-200.24

Gentlemen:

The subject GE TIL is attached for your information and outage planning usage.

In reference to the TIL, the following comments are made:

a) Stud Lubricants--Almost exclusively on our system, we use "Never-Seez Compound" bolt lubricant. Reference GE TIL 824 and C. W. Hendrix's letter of July 12, 1977, on TIL 824.

B) Many fossil units on our system with stop-valve studs in service before 1966 have already had the studs replaced due mainly to creep rupture crackage or plastic deformation (useful life of the stud has been used up).

C) There have been no major problems with the Austenitic studs on the few 1050°F valves on our system.

D) Since all valve studs are ultrasonically tested during each major outage, this means that on an average of every five years all valve studs are checked for cracks and the cracked studs are replaced. Each station should have an adequate number of spare studs as spares (based on past experience) on hand for each outage. In the event a station might experience a shortage of studs during an outage, I would suggest using the system turbine/generator parts interchangeability listing to possibly locate the required studs at another plant on the system.

E) With our present inspection schedule, all fossil valve studs will probably be replaced in the time interval specified in the TIL.

F) The GE TIL 176 procedure is used to U.T. the studs which are identical to the recommendations in TIL 891.

Att. No. 1
Calc. OSC-3369
Pg. 4 of 21

If you have any questions concerning this TIL, please call me.

Very truly yours,

Alan Grunsky

Alan J. Grunsky
Associate Engineer

AJG/dw

cc: Oscar Lashmit - SMS

Att. No. 1
Calc. OSC-33-69
P9-5 of 21

GENERAL ELECTRIC

INSTALLATION AND SERVICE ENGINEERING BUSINESS DIVISION

GENERAL ELECTRIC COMPANY, 141 PROVIDENCE ROAD, P.O. BOX 30697
CHARLOTTE, NORTH CAROLINA 28230, Phone (704) 371-3300

December 20, 1979

SUBJECT: ALLEN #1, #2, #3, #4, #5
TURBINES #108848, #115013, #115034-#118363, #118391-#118392, #128974-#128925

BUCK #3, #5, #6
TURBINES #34663, #93386, #99611

CLIFFSIDE #4, #5
TURBINES #83611, X533

DAN RIVER #1, #2, #3
TURBINES #83656, #87400, #101670

LEE #1, #2, #3
TURBINES #87460, #87461, #115033

MARSHALL #1, #2, #3, #4
TURBINES #X142-X143, X249-X250, X297, X357

OCONEE #1, #2, #3
TURBINES #X392, X393, X449

RIVERBEND #6, #7
TURBINES #99688, #101603

VALVE STUDS - TIGHTENING, INSPECTION & REPLACEMENT RECOMMENDATIONS

TIL - 891-3

Duke Power Company
P. O. Box 33189
Charlotte, N. C. 28242

Attn: Paul H. Barton, Manager
System Operations & Maintenance Nuclear & Fossil

Gentlemen:

The purpose of this TIL is to recommend tightening levels for turbine steam valve studs used to secure the upper heads on main stop valve and reheat valve casings and the stands on control valve casings. Recommendations are also provided for

GENERAL ELECTRIC

inspection and replacement of valve studs to minimize the probability of in-service failure.

If you have any questions, please give me a call.

Very truly yours,

J. M. Corriher
Service Supervisor
Steam Turbines

pdm
Attachment/s

cc: Alan Grunsky

Att. #1
Calc. 05C-3369
Pg. 1 of 21

VALVE STUDS - TIGHTENING, INSPECTION & REPLACEMENT RECOMMENDATIONS

(TIL-891)

INTRODUCTION

The purpose of this Technical Information Letter is to recommend tightening levels for turbine steam valve studs used to secure the upper heads on main stop valve and reheat valve casings and the stands on control valve casings.

Recommendations are also provided for inspection and replacement of valve studs to minimize the probability of in-service failure.

BACKGROUND

Last year an operating fossil unit experienced sudden failure of 10 out of 14 main stop valve upper head studs. The upper head lifted partially, permitting steam to escape and resulting in a forced outage. It appears likely that the head would have come off altogether if the centering rabbet had not become wedged in the cylindrical casing fit. A similar incident occurred 13 years earlier when 9 out of 16 upper head studs failed suddenly on another fossil main stop valve.

Studies were made of the variables affecting valve stud life following the 1st incident. Some of the variables are: length of time in service, number of retightenings, tightening stress level, thermal cycling and differential expansion. It was determined that the major factors are tightening stress level and number of tightenings to that stress level. As a result, a reduced tightening stress, called the "1970 level", was implemented for the valve stud materials used on most fossil units. Also, recognizing that valve studs may have limited service life regardless of the stress level, it was recommended that they be inspected for cracks at least every 6 years.

This Technical Information Letter will repeat and re-emphasize the tightening and inspection recommendations made earlier for fossil valve studs. In addition, the recommendations are being expanded in two respects. First, the useful life is predicted and replacement is recommended for certain studs regardless of whether cracks are found at inspection. Second, the recommended frequency of inspection is related to number of tightenings as well as to number of years in service.

Factors affecting the life of nuclear valve studs (operating at temperatures below 800°F) differ from those affecting fossil valve studs. Nuclear valve studs are not operating in the material cree range. Therefore, stud life is not related to tightening stress c number of tightenings in the same manner as for fossil valve studs Stud life can be affected by excessive overtightening, corrosion and other factors, however, making it advisable to establish a reg lar inspection program. Recommendations for fossil and nuclear valve studs, being somewhat different, are covered separately in this Technical Information Letter.

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STUD MATERIALS

Table I lists the materials and identification stampings that have been used for valve upper head and stand studs.

B5F4C and B5F5B will be found on nuclear valves (below 800°F).

B5F5B and B50A125E are by far the most commonly used stud materials on fossil valves (800°F and higher). If any studs of B50-A125B or C remain in service, the recommendations for B50A125E apply.

Austenitic stud materials have been used on a limited number of fossil valves at 1050°F and higher. Austenitic studs are non-magnetic.

It is expected that most owners can identify their stud materials from previous inspection and tightening records. If not, the material should be determined from the stamping at the next inspection. In those cases where the material is not known, and needs to be known as an input for scheduling maintenance (for example, on pre-1966 units), the necessary information can be obtained through your G.E. Service Engineer.

STUD LUBRICANTS

FEL-PRO N1000 and CRANE COMPOUND JC 60 are approved thread lubricants See TIL 824 for more detail.

TIGHTENING RECOMMENDATIONS

A. Fossil Valve Studs (800°F and higher)

The recommended elongation ranges for B5F5B and B50A125E studs are given on attached drawing 223A3906. This is the "1970 Level" which is approximately 70% of the pre-1970 stress level. Drawing 223A3906 takes precedence over instructions on valve assembly drawings issued before the "1970 Level" was implemented.

Tightening of austenitic studs (see Table I) should be continued per the original valve assembly drawing instructions.

B. Nuclear Valve Studs (below 800°F)

The elongation range for B5F4C and B5F5B, operating below 800°F, is also given on drawing 223A3906. This is essentially the pre-1970 stress level before it was reduced for those valve studs operating in the material creep range.

REPLACEMENT RECOMMENDATIONS

A. Fossil Valve Studs (800°F and higher)

Most valve studs operating at 800°F and higher are in the creep range of the stud material. After the studs are tightened, and the valve brought up to operating temperature, the material will

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REPLACEMENT RECOMMENDATIONS - (Cont'd.)

be accounted for in determining the initial tightening stress level in order to prevent leakage from developing in service. Each time a stud is tightened to the initial stress level some of the stress creeps out in service and the stud suffers some plastic strain damage. The plastic strain accumulates with each tightening cycle until finally, after some number of cycles the rupture ductility of the material is used up and a crack wil develop.

A bending stress is also imposed on valve studs due to the difference in expansion of the valve casing and upper head during heating and cooling cycles. Low cycle fatigue due to bending is a contributing cause of valve stud failure but is not the primary damage mechanism when recommended rates of temperature chanc are observed. Creep rupture damage, as described in the preceding paragraph, is considered to be the primary damage mechanism for fossil valve studs and the number of tightenings is the primary measure of the amount of stud life expended.

Using analytical methods calibrated by laboratory and field data we now believe that the useful life of fossil valve studs can be predicted based on number of tightenings with sufficient accuracy to be helpful in maintenance planning. The end of useful life is considered to have been reached after that number of tig enings which corresponds to a 50% probability of stud cracking. At this point it is recommended that all studs that have experienced that number of tightening cycles be replaced regardless c whether cracks are detected. The rupture ductility will have been nearly used up and the probability of cracking before the next inspection will be high.

The following recommendations assume the valve studs were tightened to the recommended stress levels in effect at the time of the tightening, and that recommended rates of temperature change were observed at the valves. Higher stress levels or temperature rates can be expected to cause earlier stud failures:

B5F5B Stud Material:

All valve upper head and stand studs in service before 1966 have seen at least 14 years of service, and for at least 5 of those years were stressed to the pre-1970 level. Assuming one tightening every 2 years on the average, they have been tightened at least 7 times and are near the end of useful life as defined above. It is recommended that all B5F5B fossil valve studs in service before 1966 be replaced by the end of 1981.

Newer B5F5B studs (in service in 1966 and later) should be replaced after 11 tightenings or if cracks are found during periodic inspections. This is discussed in more detail under "INSPECTION RECOMMENDATIONS".

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Calc. OSC-3369
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B5F5B Stud Material - (Cont'd.)

Replacements for B5F5B studs will also be made of B5F5B. It is true that B50A125E has a longer life expectancy and is used on all new fossil valves. The problem is that the two materials have different coefficients of expansion and different tightening stress levels, making it unacceptable to mix them on the same valve. It is also undesirable to mix the materials on similar valves on the same unit, or in the same station, because of the bookkeeping problems created. The life expectancy of replacement B5F5B studs is 11 tightenings (estimated to correspond to about 22 years). This is felt to be an acceptable life expectancy on most units requiring replacements.

B50A125E Stud Material:

All valve upper head and stand studs in service before 1966 have seen at least 14 years of service, and for at least 5 of those years were stressed to the pre-1970 level. Assuming one tightening every two years on the average, they would have been tightened at least 7 times and are near the end of useful life as defined above. It is recommended that all B50A125E fossil valve studs in service before 1966 be replaced by the end of 1983. (This also applies to studs of B50A125B&C if any remain in service).

Newer B50A125E studs (in service in 1966 and later) have a useful life expectancy of about 25 tightenings because of the reduced tightening stress level. Assuming one tightening every 2 years on the average, these studs have a high probability of lasting as long as the turbine. However, tightening records should be kept and the studs should be replaced after 25 tightenings if this number is reached. Inspection and replacement, if cracks are found, should be as discussed under "INSPECTION RECOMMENDATIONS".

Austenitic Stud Material:

Austenitic studs have not shown a tendency to crack due to loss of rupture ductility, and so there are no replacement recommendations related to number of tightenings. Inspection and replacement, if cracks are found, should be as discussed under "INSPECTION RECOMMENDATIONS".

B. Nuclear Valve Studs (below 800°F)

Nuclear valve studs operating below 800°F are not in the material creep range and do not suffer plastic strain and loss of rupture ductility in service. Therefore, there are no replacement recommendations related to number of tightenings. Inspection and replacement, if cracks are found, should be as discussed under "INSPECTION RECOMMENDATIONS".

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INSPECTION RECOMMENDATIONS

The previous recommendation has been to inspect studs for cracks at least every 6 years, regardless of material or application. The new recommendation relates inspection frequency to number of tightenings, as well as to years in service, for fossil valve studs of B5F5B and B50A125E material.

Any studs that are found cracked must be replaced immediately. It is desirable to also replace all the other studs of the same age in that valve if new studs are available. If less than 30% of the stu in a valve are cracked, however, it is generally satisfactory to re place only the cracked studs, provided that the other studs of the same age are replaced within one year. If more than 30% of the stu are cracked, all studs of that age in that valve and mating valves should be replaced immediately.

At a minimum, the number of spare studs recommended in the parts ca alog should be kept on hand. This may vary from 10% to 50%, depend ing on the type of valve. If the studs are B5F5B or B50A125E, and in fossil service before 1966, the spares on hand should be increas ed to 100% in preparation for complete replacement.

A. Fossil Valve Studs (800°F and higher)

B5F5B Stud Material:

It is recommended that B5F5B studs for valve upper heads and stands be tested for cracks at least after every 3 tightenings or every 6 years, whichever comes first. The studs should be replaced at the next valve inspection following 11 tightenings (for studs in service after January 1, 1966). This is shown in tabular form below:

Stud Insp. No.	1	2	3	4
Tightening No.	3	6	9	*
(or) Years Service	6	12	18	24

* Replace after 11 tightenings.

As was discussed under "REPLACEMENT RECOMMENDATIONS" the stud replacement recommendation in the above table is based only or number of tightenings, not on years in service. The years in service are shown in the above table only to help establish the minimum inspection frequency.

Att. #1
Calc. OSC-3369
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INSPECTION RECOMMENDATIONS - (Cont'd.)

B50A125E Stud Material:

It is recommended that B50A125E studs for valve upper heads and stands be tested for cracks at least after every 3 tightenings up to 18 and after every 2 tightenings thereafter, or every 6 years, whichever comes first. This is shown in tabular form below. If the number of tightenings reaches 25, the studs should be replaced at the next valve inspection (studs in service after January 1, 1966):

Stud Insp. No.	1	2	3	4	5	6	7	8	9	-
Tightening No.	3	6	9	12	15	18	20	22	24	*
(or) Years Service	6	12	18	24	30	36	42	48	54	-

* Replace after 25 tightenings.

Austenitic Stud Material:

It is recommended that austenitic studs for valve upper heads and stands be tested for cracks at least every 6 years.

B. Nuclear Valve Studs (below 800°F)

It is recommended that studs for nuclear valve upper heads and stands be tested for cracks at least every 6 years.

Because they are operating below the material creep range, any cracks found in nuclear valve studs should be reported to the G.E. Service Engineer immediately for assistance in diagnosing the cause.

INSPECTION PROCEDURE

Magnetic particle testing of magnetic materials and red dye testing of non-magnetic materials are satisfactory methods of checking for cracks, but both methods require removal of the studs from the casing. An ultrasonic test procedure has been developed which has proven to be a dependable method of locating cracks. The ultrasonic test method is recommended because it does not require removal of the studs. In some instances the grain size in austenitic materials may prevent ultrasonic inspection, but this must be determined by trial.

To assist in the inspection of valve studs we have prepared the attached detailed test procedure TG-19A entitled "Ultrasonic Testing Of Steam Valve Studs After Periods Of Service", and report form TG-19AU entitled "Ultrasonic Examination Of Valve Studs".

STUD REMOVAL

When a stud is removed from a casing, care should be taken to avoid damage to the casing threads. A generous application of penetrating oil will often help. Other techniques which have been used with some success include cooling the stud with nitrogen and/or heating

Att. #1
Calc. 05C-3369
pg. 13 of 21

STUD REMOVAL - (Cont'd.)

the casing locally to about 300°F. It should be expected that some percent of the studs to be removed will not yield to the above techniques, and equipment should be available to drill out these studs.

SUMMARY OF RECOMMENDATIONS

Fossil Units (800°F and Higher):

1. Tighten B5F5B and B50A125E valve studs per 223A3906. Drawing 223A3906 takes precedence over instructions on valve assembly drawings issued before the "1970 Level" was implemented.

2. Tighten austenitic valve studs per the original valve assembl drawing.

3. Replace all B5F5B valve studs in service before 1966 by the e of 1981.

4. Replace all B50A125E valve studs in service before 1966 by th end of 1983.

5. Inspect all B5F5B studs for cracks at least every 3 tightenir or 6 years, whichever comes first. Replace after 11 tightenings (for studs in service after January 1, 1966).

6. Inspect all B50A125E studs for cracks at least after 3 tighte ings up to 18 and every 2 tightenings thereafter, or every 6 years, whichever comes first. If the number of tightenings reaches 25, the studs should be replaced at the next valve in spection (for studs in service after January 1,1966).

7. Inspect all austenitic studs for cracks at least every 6 yea:

Nuclear Units:

1. Tighten studs per the valve assembly drawing or drawing 223A (they should be in agreement).

2. Inspect studs for cracks at least every 6 years.

AH. #1
Calc. OSC-3369
pg. 14 of 21

TABLE I

VALVE STUD MATERIALS

G.E. Material Spec.		Identification Stamping	
		NEW	OLD *
B5F4C	Ferritic	N	F4
B5F5B	Ferritic	L	F5
B50A125B	Ferritic	P	--
B50A125C	Ferritic	W	--
B50A125E	Ferritic	XD	F25
B50A146A	Austenitic	S	A6A
B50A199B	Austenitic	XA	--
B50A199D	Austenitic	XB	--

* In use from about 1960 to 1967.

GENERAL ELECTRIC

TITLE ELONGATION FOR PRESTRESSING VALVE UPPER HEAD AND STAND STUDS - 1970 LEVE

FIRST MADE FOR

223A3906 CONT ON SHEET - SH NO. 1

223A3906 SH NO. 1 ATTACH

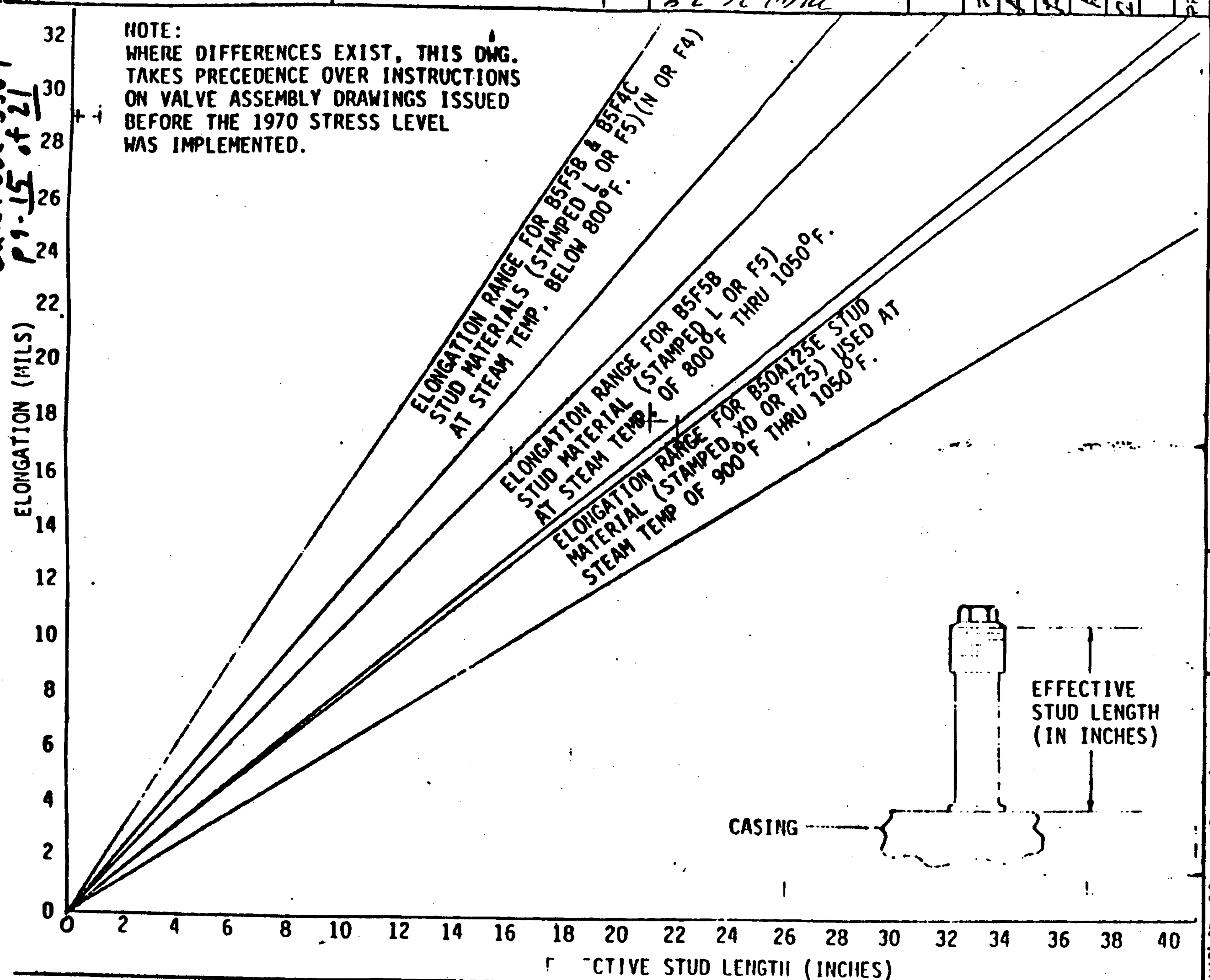
TIL 891

Att. 1

Calc. 0SC-3369 pg. 15 of 21

REVS: 4 R.Muir-FP. ADDED N or F4

3 R.Muir Fut Prod



223A3906

TURBINE DIV OR DEPT.

SCHENECTADY LOCATION

APPROVALS

ISSUED March 24, 1970

Att. #1
Calc. 05C-3369
(TIL 891 ATTA
Pg. 16 of 21

ULTRASONIC TESTING OF STEAM VALVE STUDS AFTER PERIODS OF SERVICE

1. Introduction

These instructions outline the procedure to be followed when performing ultrasonic longitudinal wave tests on valve studs, in place, after periods of service.

2. General

Tests shall be performed by well trained and properly qualified personnel.

Tests shall be performed while the studs are in place and generally after the cover has been removed. However, where the end of the stud protrudes above the nut, the studs may be tested without disassembly.

A Sperry Reflectoscope, Type UR or equivalent, shall be used. The ultrasonic instrument vertical presentation shall be linear within ± 5% of the full scale deflection.

The exposed end of each stud shall be free of all scale and oxide. Caution should be exercised to maintain a flat surface for search unit contact.

A suitable couplant such as SAE 20 oil shall be used.

The distance calibration markers shall be adjusted on a calibration bar of material similar to that of the studs, for accurate distance measurements.

3. Method of Test

Tests shall be performed using a 5.0 Mc 1/2 or 1 inch diameter type ZR search unit. Experience has shown that these search units give the best results. However, due to variations in type of material and geometry it may be necessary to use other frequencies and diameter search units.

The sweep length shall be adjusted until the 1st back reflection of the stud is visible on the right hand side of the oscilloscope screen as shown in Figure 1.

The distance from the top of the stud to the valve joint surface shall be measured and recorded.

The oscilloscope screen shall be marked at the measured distance determined in the previous paragraph. The results obtained to date indicate that crack indications will appear at the 1st or 2nd thread, 0 – 1/4 inch below the valve joint surface as shown in Figures 1 and 2.

The sensitivity shall be adjusted until the amplitude of the indications from the valve end threads is 5% of 1 1/2 inches sweep to peak.

The studs shall be tested completely from the exposed end by scanning 360 degrees in a see-saw manner as shown in Figure 3.

Each stud shall be assigned a number indexed with respect to the dowel pin as shown in Figure 4.

The scanning procedure shall be repeated on all studs.

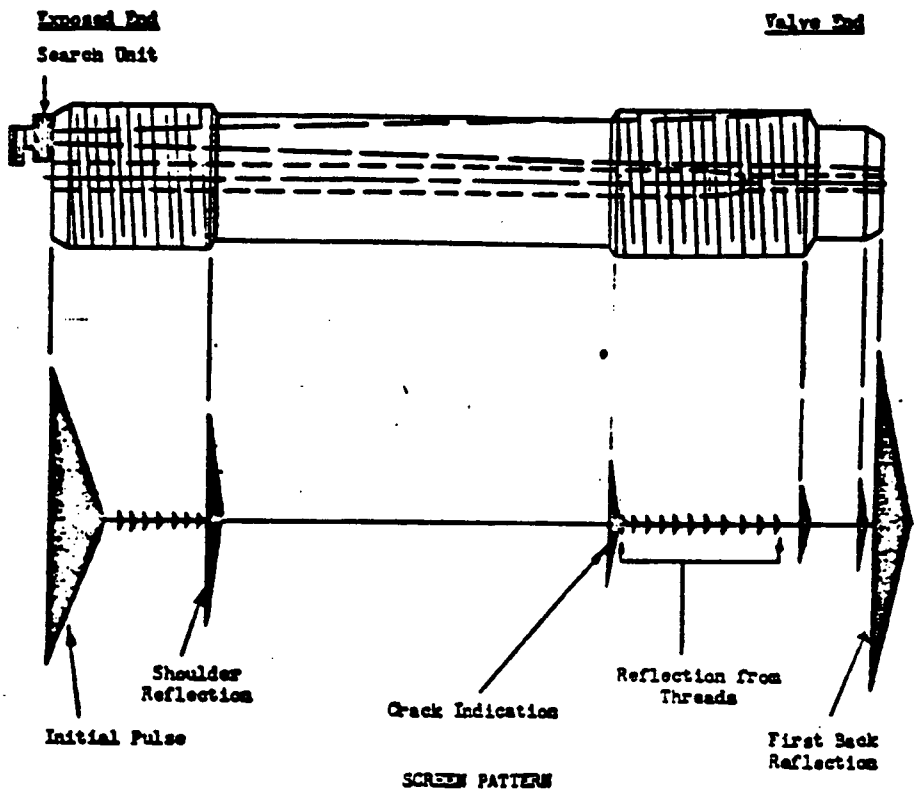
All indications shall be marked on the test surface as they occur. The circumferential distribution of indications shall be indicated with respect to a clock system. The 12 o'clock position on each stud is toward the OD of the valve and in radial line with the center of the valve bore.

RECORD OF TEST RESULTS:

The ultrasonic test report shall contain all pertinent information regarding the test as outlined in this instruction. A sample test report is shown in Figure 5.

ACCEPTANCE AND REJECTION

Copies of the ultrasonic test report should be made available to General Electric Company personnel at the earliest possible time following completion of the tests in order that acceptance or rejection can be made of the studs that were tested.



SCREEN PATTERN

Figure 1

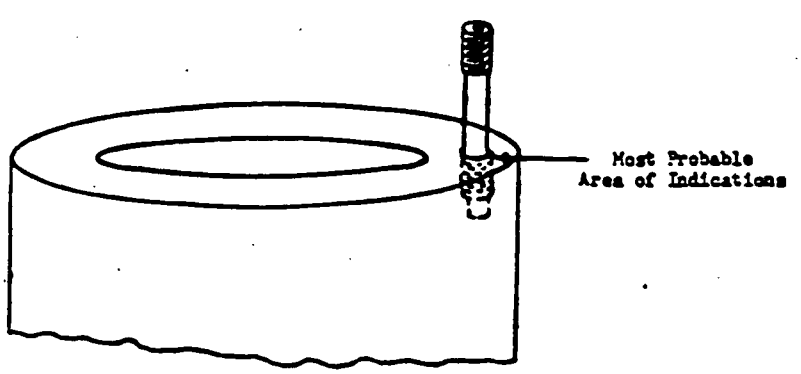
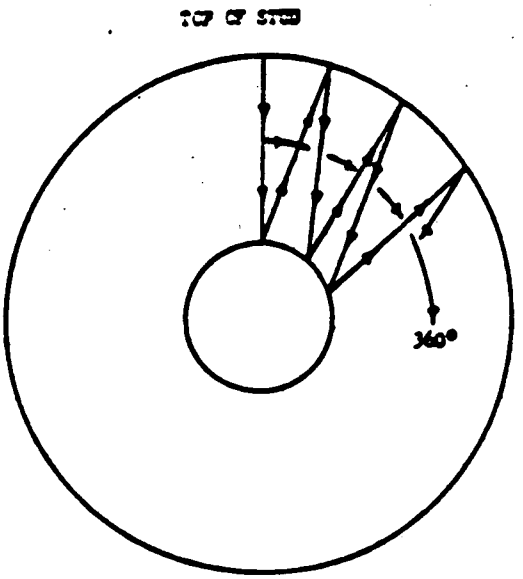


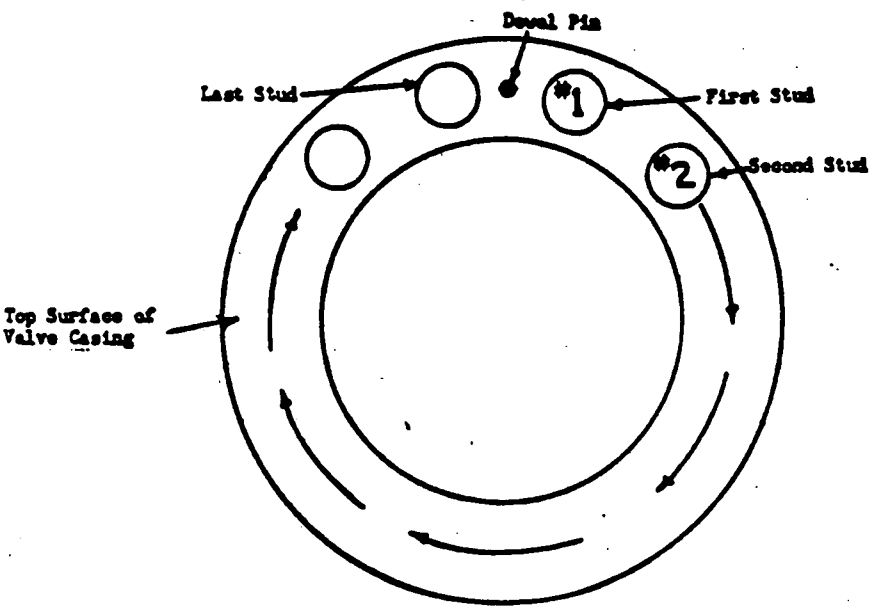
Figure 2

Att. #1
Calc. OSC-3369
Pg. 18 of 21



SCANNING IN A SEESAW MANNER-360°

Figure 3



STUD NUMBERING SYSTEM

Figure 4

In addition to customers' requirements for copies of the test reports, two copies should be forwarded to:

STGMD, Product Service - Mgr. Maintenance Su
Bldg. 269 - Rm. 200, North Ave.
Schenectady, NY (12345)

RETURNING STUDS FOR LABORATORY EXAMINATION

LST-G Product Service should be contacted for instructions before returning cracked studs to the factory for metallurgical examination. There is not a sufficient number of Laboratory Technicians to perform routine testing of cracked studs and arrangements to make such tests, if desired by the purchaser, should be made with local testing organizations.

ULTRASONIC EXAMINATION OF VALVE STUDS

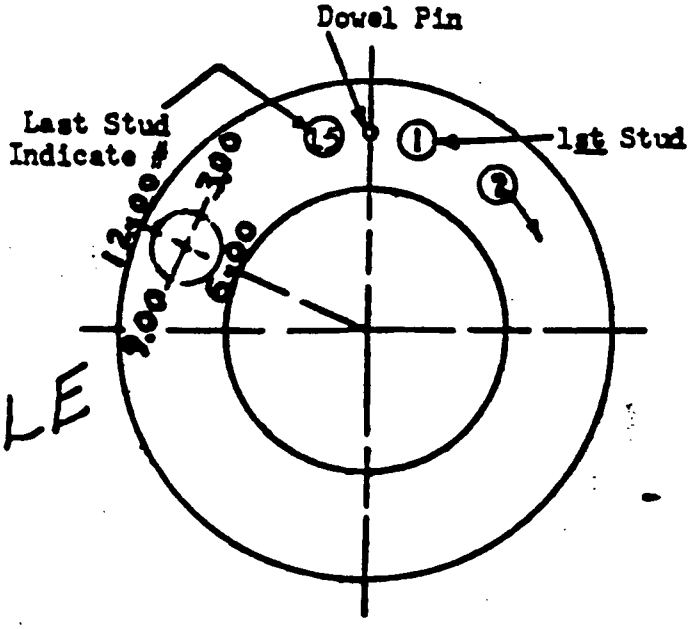
AH #1
Calc OSC-3369
Pg. 19 of 21

Owner Niagara Mohawk Corp.
Location Albany
Turbine No. 000000 Unit No. 100

Stud No.	Mag. %	Circum. Distr. (Time)	Dist. Top
1	25	9:00 - 12:00	19"
2	OK		
3	OK		
4	100	9:00 - 3:00	19"
5	OK		
6	OK		
7	OK		
8	20	12:00 - 3:00	19"
9	OK		
10	OK		
11	OK		
12	OK		
13	OK		
14	OK		
15	OK		
16			
17			
18			
19			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			

SAMPLE

Valve Type Stop
Stud Length 26½" Diam. 4"
Frequency 2.0 mc. Size ½" Type ZR
Tested By A.B. Fish
Company General Electric Co.
Address Schenectady, N.Y.
Date of Test Nov. 30, 1966



Stud bolt hour service 61,000
Times studs were tightened 5
Number of cold starts 25
Number of studs questioned sonically 3
Number of studs replaced 15
GE-I&SE Representative D. Hutchinson

Additional Information

Indications in the studs were verified using a 2.25 mc. ½" diam. ZR search unit.

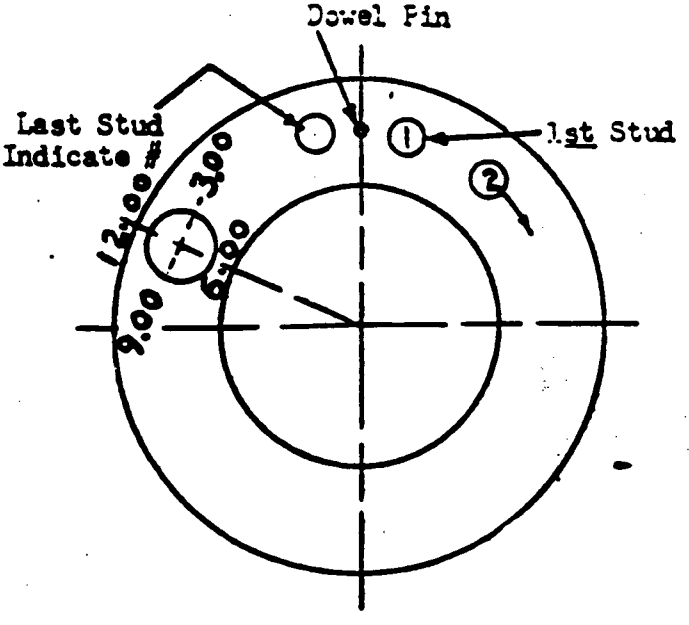
ULTRASONIC EVALUATION OF VALVE STUDS (TIL 891 ATTA

Att. #1
Calc. 05C-3369
Pg. 20 of 21

stomer _____
station _____
Turbine No. _____ Unit No. _____

Stud No.	Mag. %	Circum. Distr. (Time)	Dist. Top
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			

Valve Type _____
Stud Length _____ Diam. ___
Frequency _____ Size _____ Type ___
Tested By _____
Company _____
Address _____
Date of Test _____



Stud bolt hour service _____
Times studs were tightened _____
Number of cold starts _____
Number of studs questioned sonically _____
Number of studs replaced _____
GE-I&SE Representative _____

Additional Information

Att. No. 1
Calc. OSC-3369
Pg. 21 of 21

TELEPHONE CONVERSATION RECORD

DATE: 11-28-88 **FILE NO:** UT-88-8

FROM: A. C. Gladney

TO: Jack Packard of General Electric

ROUTE

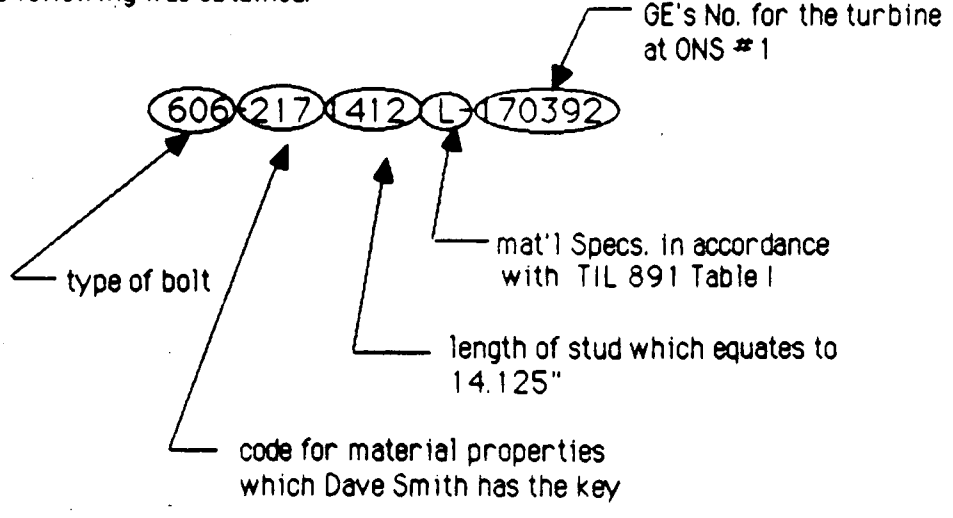
CARL FREEMAN-ONS
TIM TUCKER
ROYCE WILLIAMS

SUBJECT: Main Steam Turbine Stop Valve Upper Head Stud Examination For Oconee Nuclear Station

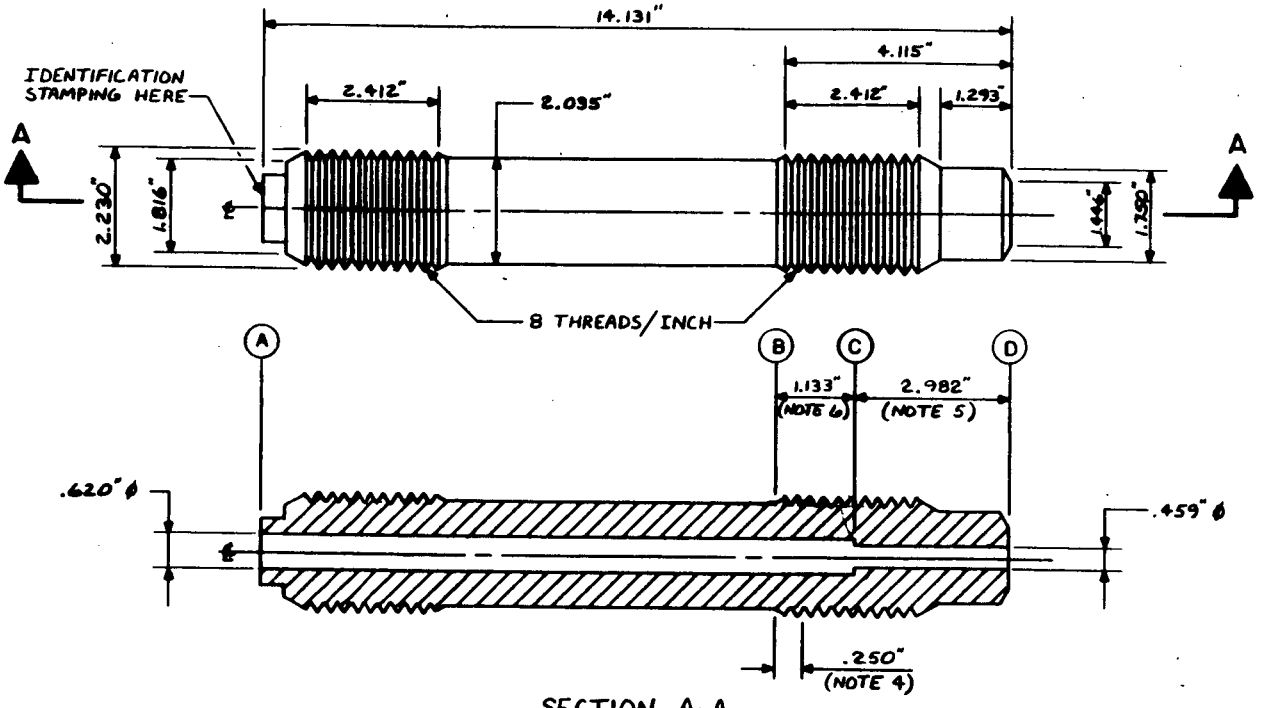
Jack was called to see if GE was going to support our efforts by providing a drawing of the upper head stud on the main steam turbine stop valve. GE will not send us a drawing of the stud, but they may approve the drawing I am having prepared by Design Engineering.

In the GE Recommendation TIL-891, it specifies that B5F5B stud material shall be the type of studs used in our valves. None of the numbers stamped on the studs correlate. I asked Jack if the numbers stamped on the studs were coded in anyway that needed information could be obtained if you knew the key. He said yes, and that Dave Smith of NPD should have this key.

Pursuing this a little further, the following was obtained:



ATTACHMENT # 2
CALC. OSC-3369



SECTION A-A

NOTES:

(1.) STUDS WILL BE MARKED WITH A G.E. TURBINE NUMBER AS FOLLOWS: 170392 170393 170449
(2.) DIMENSIONS ON THIS DWG. ARE AS MEASURED FROM A SPARE UNIT #1 STUD.
(3.) THESE STUDS ARE A FERRITIC MATERIAL TO G.E. MATERIAL SPEC. B5F5B. STUDS WILL BE STAMPED WITH "L" FOR IDENTIFICATION OF THIS MATERIAL.
(4.) PER TIL-891, ANY INDICATION FOUND TO DATE OCCURRED HERE IN THE FIRST 0-1".
(5.) BASED ON LOAD DISTRIBUTION IN THREADED FASTENERS, THE STRESSES IN THIS AREA WOULD BE LOW ENOUGH THAT ANY INDICATION WHICH MIGHT EXIST SHOULD NOT PROPAGATE. (SEE OCONEE CALCULATION OSC-3369).
(6.) THIS IS THE DISTANCE FROM THE FIRST THREAD TO THE SHOULDER ON THE I.D. AND ALSO EQUALS APPROX. ONE HALF THE THREAD DIAMETER.

Q A CONDITION 1
NUCLEAR SAFETY RELATED

IDENTIFICATION LEGEND

606 - 217 - 1412 - L - 170392

- 606 - TYPE OF BOLT
- 217 - BOLT LENGTH (14.125")
- 1412 - MATERIAL SPEC. CODE
- L - MATERIAL PROPERTIES CODE
- 170392 - G.E. TURBINE NUMBER

REFERENCES:

1. G.E. TECHNICAL INFORMATION LETTER (TIL-891) TRANSMITTED TO DUKE POWER BY LETTER OF 12-20-79.
2. G.E. TURBINE GENERATOR MANUAL OM-200-195.

NO.	REVISIONS	ORIG	DATE	CHKD	DATE	APPR	DATE
ORIG.	RELEASED FOR USE WITH CALC. OSC-3369	—	—	—	—	—	—

CIVIL | ELEC. | MECH. — UNINSPECTED

DUKE POWER COMPANY
OCONEE UNITS 1, 2 & 3

MAIN STEAM TURBINE STOP VALVE UPPER HEAD STUD

SKETCH OSC-3369 | REV. 0

DUKE POWER COMPANY

Request For Relief From
Inservice Inspection Requirement

Station: Oconee

Unit: 1

Reference Code: 1980 ASME Section XI, including addenda through Winter 1980

1. Component for which exemption is requested:

   a. Name and Identification Number:

      Integrally welded Piping Attachments for Support No. 03-0-480A-H9B on the Feedwater system (Duke System No. 03), ISI Item No. C03.040.038

   b. Function:

      To support the weight of and provide structural stability to the Feedwater Piping System

   c. ISI Class/Duke Class: ISI Class II/Duke Class F

   d. Valve Category: N/A

II. Reference Code Requirement that has been determined to be impractical:

   ASME Boiler and Pressure Vessel Code Section XI, 1980 Edition, including 1980 Winter Addenda, Surface Examination (PT/MT) specified in table IWC-2500-1, Category C-C, Item No. C3.40

III. Basis for Requesting Relief:

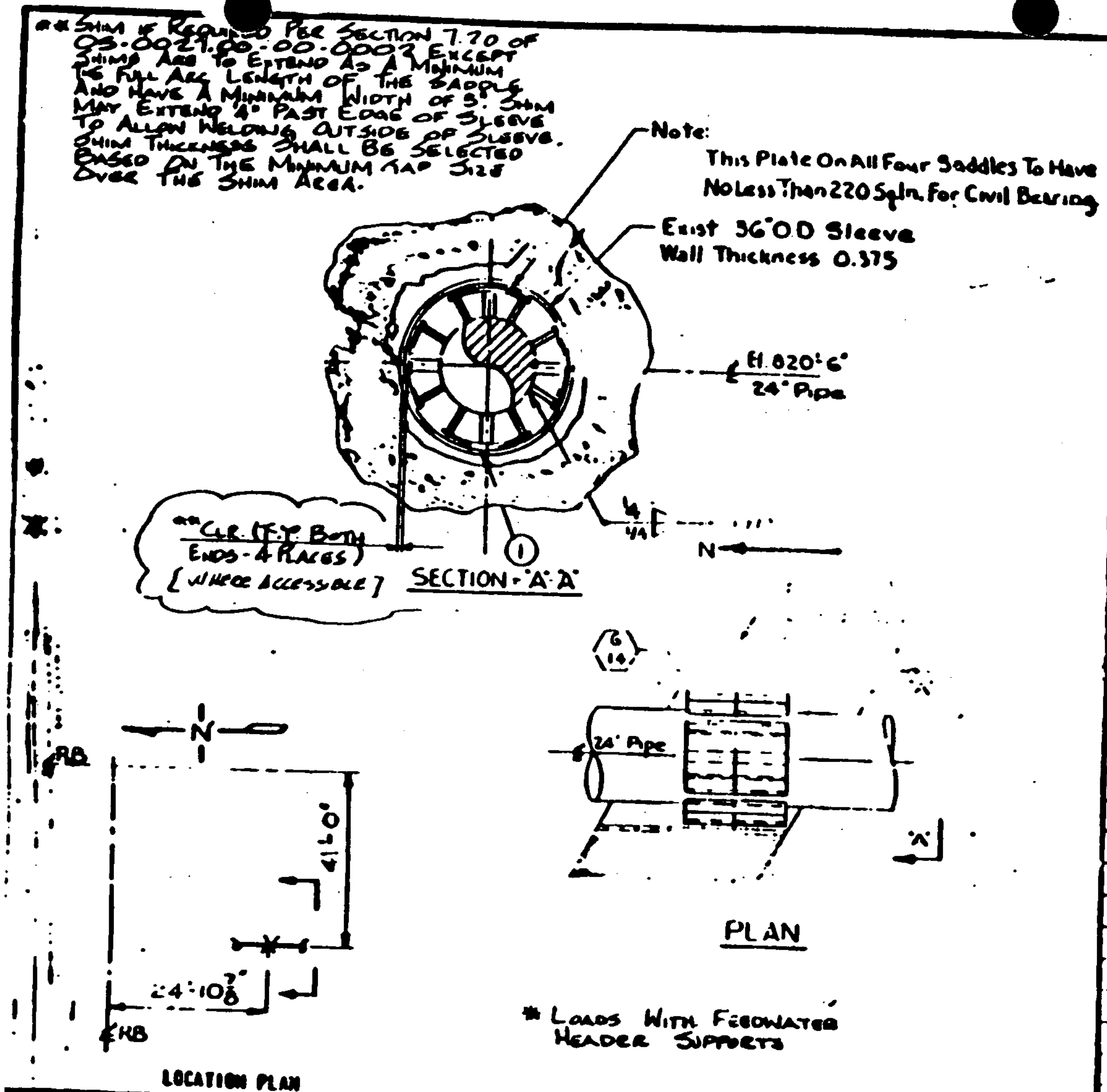
The integral attachments are inaccessible for a Surface Examination because of their physical location inside a wall penetration. The integral attachments are welded to a 24" Feedwater pipe that runs through a 36" pipe sleeve penetrating the wall at an approximate 45° angle. Due to the angle, the integral attachments are inside the sleeve at a depth of approximately 12" from the near side and 36" from far side with a maximum clearance of 5" as shown on attached piping support detail No. 03-0-480A-H9B (pages 1-3).

IV. Alternate Examination:

A Visual Examination will be performed on the integrally welded attachments for Support No. 03-0-480A-H9B (ISI Item No. C03.040.038) meeting the requirements of 1980 ASME Section XI, IWA-2211, VT-1 Visual Examination. This inspection will provide assurance of the structural integrity of this support.

V. Implementation Schedule:

This examination will be performed in the month of May, 1990, during the current (12th) refueling outage.



QUAN.	MATERIALS AND OPERATIONS	ITEM NO.
0?:	FT. GUIDE CONSISTING OF:	
4	Saddle/sk. Per Detail 'A' TV-2368	
1	Plate & Tag	1
	No: 03-0-480A-H98	
	COAT OR ... TO ABOVE MAT'L.	

FOR INFORMATION ONLY

S/R CALC. NO. OSC-1297-07

"X" Rigid

NO.	X	Y	Z
... SSE	.000 / .000	.000 / .000	-.814 / .639

PROJECT NO. 1-03-05 SYSTEM NO. 03
ISSUE 0
DATA PT. 370 NUCLEAR CLASS

FOR INSERVICE INSPECTION USE ONLY

NOTE: THIS DRAWING SUPERSEDES BECHTEL SKETCH 0-4903-17 REV. # D, DATED 7-17-70

QA CONDITION 1

SYSTEM DATA	
DESIGN RATING	(A)
DESIGN PRESSURE	1050 PSIG
DESIGN TEMPERATURE	600° F
OPERATING TEMPERATURE	?..0° F
PIPE	25" Sch. 80, 106-Gr.B
INSULATION	3"

LOAD	
T (Thermal Load)	-7672
D (Dead Load)	-1039
DE (OBE)	± 16341
MHE (SSE)	± 37682
DE + T + D	+15368 / -25118
MHE + T + D	+31709 / -41459

LEVEL 13312-002

NO.	REVISION	BY	CHKD	APPR	DATE
D1	Revised Per ...				6-19-87
0	Revised Per ICA 79-14				

DUKE POWER CO.
OCONEE NUCLEAR POWER STATION - UNITS 1, 2, & 3
PIPING SUPPORT DETAIL
03-0-480A-H98

DRN.	HLU	4/15/81	CHKD.	DTP	4-21-81
INSP.		5/1/81	APPR.	OLS	5/1/81
SCALE: NONE		SHT. 1 OF 3		REV. D1	

Request For Relief Ser. No. ONS-013
Attachment (pages 1-3)

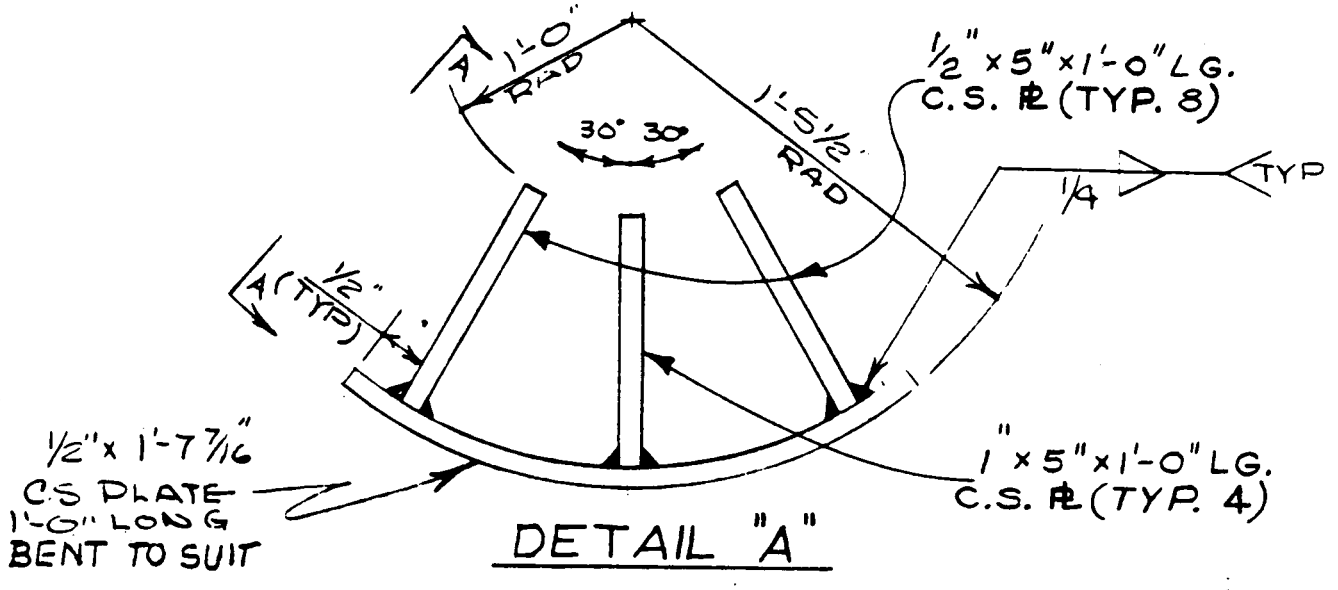
GRINNELL

CUSTOMER DUKE POWER CO.

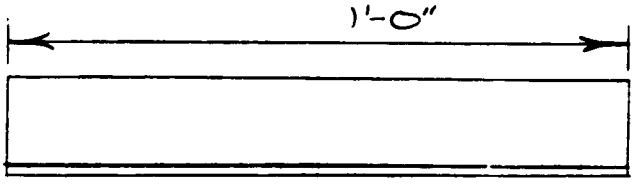
ORDER OR CONT. No. 57-HDW-1678

NAME OCONEE NUC. STA. UNIT # 1

Note: This drawing supersedes Grinnell Sketch No. O-490B-17A Rev. O Dated 6/19/70



DETAIL "A"



SECTION A-A

FOUR (4) REQ'D.

ITEM No.	MATERIALS AND OPERATIONS	QUAN.	SHIP.
	Plate assembly as detailed above, TW-236 #	4	

F. DRW'G. Nos. PIPE

STEEL

MARK No 03-0-480A-H9B

SHT. 2 OF 3

REV. D1

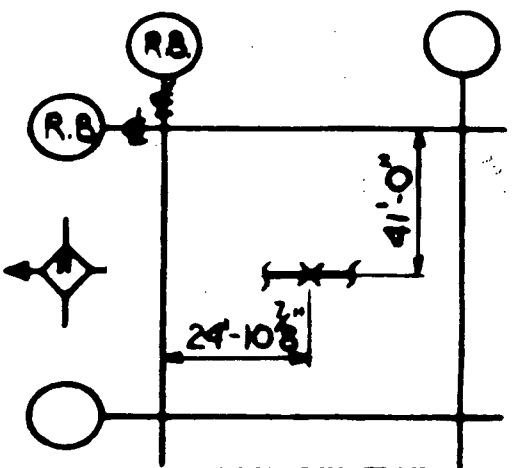
PRINTED IN U.S.A. 3-69

ITEM NO	NO REQ'D	PART NO	SIZE	DESCRIPTION	MATERIAL

"Y" RIGID

SUPPORT DATA	
T (THERMAL LOAD)	21699
D (DEAD LOAD)	-6874
DE (OBE)	** 11949
MHE (SSE)	** 23897
DE+T+D	+27148/-19197
MHE+T+D	+39096/-31145

MVMTS. "	X	Y	Z
THERMAL	.000	.000	-.814
SSE SEISMIC	.000	.000	.639

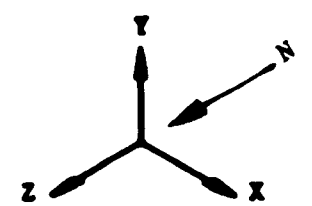


LOCATION PLAN

PROBLEM NO. 1-03-05 SYSTEM NO. 03

ISSUE 0

DATA PT. 370 NUCLEAR CLASS



* LOADS WITH FEEDWATER HEADER SUPPORTS
** LOADS WITHOUT FEEDWATER HEADER SUPPORTS

QA CONDITION 1

REV.	DATE	REVISIONS	BY	CH'K	DESIGN SUPVR	ENG'R	PROJ. ENG'R	APP'D
△								
WA	-	SEE SHT. 1 OF 3	-	-	-	-	-	-
▲	11-5-80	REVISED PER IEB 79-14				N/A	N/A	N/A

DUKE POWER CO.
Oconee Nuclear Station

Iso. Drawing No.	Item No.	Unit No.
0-490B-3	2	1

PIPE SUPPORTS

MAIN FEEDWATER SYS.
WEST GENERATOR

GAITHERSBURG

STRESS ISO 0-490B-3(5)
REF. DWGS. COMPOSITE
CIVIL

JOB. NO.	HANGER NO.	REV.
13312-002	03-0-480A-H9B SHEET 3 OF 3	D1

N72948

11.0 Class 1 and 2 Repairs and Replacements

As required by ASME Section XI 1980 Edition, a record of the Class 1 and 2 Repairs and Replacements for work performed from February 14, 1989 through June 4, 1990 is provided and is included in this section of the report. The individual work request documents are on file at the Oconee Nuclear Station.

REPAIRS/REPLACEMENT LOG

ASME SECTION XI - 1980

OCONEE NUCLEAR STATION

Interval covered: From: 02-14-89 To: 06-04-90

NOTE: (1) Unit #1 Refueling outage #12 Start-up Leak Test *Indeterminate from Work Request Review

Prepared By: QA Technical Support Date: 6-04-90

Reviewed By: T. J. Coleman Date: 6-25-90

Transmitted to
ISI Supervisor By: T. J. Coleman Date: 6-25-90

TJC/jah

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
57981A	1	A	PREPPED AND INSPECTED 1-51A-11-87 & 88
57095E	1	B	PT VALVE 1MS-84 AND MT INSPECTED
57074D	1	B	PT INSPECTED 1MS-102
57071D	1	B	PT INSPECTED VALVE 1MS-105
57072D	1	B	PT AND MT INSPECTED VALVE 1MS-104
17810C	1	B	VT INSPECTED VALVE 1MS-24
57073D	1	B	PT AND MT INSPECTED 1MS-103
52942H	1	B	AUXILIARY FWD NOZZLE #5 HEADER FLANGE PT & RT INSPECTED WELD REPAIR
21382C	1	B	TACK WELD ON VALVE 1-SF-23
24141C	1	A	WELD REPAIR TO SEAL WELD ON UPPER HEATER BUNDLE OF PRESSURIZER
51801J	1	B	REPLACE 1CS11 WITH 09J-341
51802J	1	B	REPLACED 1CS12 WITH 9J-341
51793J	1	B	MADE SEAL WELD ON SEAT RING ON 1LPSW-321
51805J	1	B	REPLACED 150 418 WITH DMV-849
0502051	1	2	REPLACED BOLTING VALVE 1-BS-16
0502375H	1	2	REPLACED BOLTING VALVE 1-BS-14
57996A	1	1	REPLACED BOLTING OTSG B LPM
57995A	1	1	REPLACED BOLTING OTSG A UPPER PRIMARY MANWAY
17796C	1	2	REPLACED BOLTING LPI A COOLER
052945H	1	2	REPLACED GAMMA PLUG WELD # 1-01A-2-5BZ

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
62794C	1	2	REPLACED GAMMA PLUG WELD # 1-03-3-43BZ
57832C	1	1	REPLACED 1RC-68 AND 1/2 NUTS ON LEAK OFF FLANGE
57469D	1	1	REPLACED 1RC-66
15685C	1	2	REPLACED B/B BOLTING 1LP-22
57831C	1	1	REPLACED 1RC-67 AND LEAK OFF FLANGE NUTS
57095E	1	2	REPLACED DISC IN 1MS-84
57071D	1	2	REPLACED PRESSURE SEAL HEAT BOLTING 1MS-105
57072D	1	2	REPLACED PRESSURE SEAL HEAD BOLTING 1MS-104
17810C	1	2	REPLACED B/B BOLTING 1MS-24
052544H	1	1	REPLACED BOLTING CRDM FLANGE #38
57011E	1	2	REPLACED BOLTING RBCU B
052940H	1	1	REPLACED BOLTING LPH "B" OTSG
15653H	1	1	REPLACED BOLTING IRV FLANGE "A1" RCP
19876C	1	2	REPLACED "1C" HPI PUMP
57005E	1	2	REPLACED BOLTING RBCU 'A'
052942	1	2	REPLACED BOLTING AUXILIARY FWD NOZZLE #5
052949H	1	2	REPLACED BOLTING "B" OTSG L 5 MANWAY
11699C	1	2	REPLACED B/B BOLTING 1MS-155
24141C	1	1	REPLACED BOLTING ON UPPER HTR BUNDLE PZR

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
51035I	1	2	REPLACED B/B BOLTING 1HP-188
51799J	1	2	REPLACED B/B BOLTING 1-FW-64
51676J	1	1	REMOVED, STABILIZED, PLUGGED TUBES 1A OTSG B & W FCA 04-4596
51677J	1	1	REMOVED, STABILIZED, PLUGGED TUBES 1B07SG B & W FCA 04-4597
54114I	1	2	REPLACED DISC 1MS-2
57977A	1	2	REPLACED BWST MANWAY BOLTING
98615C	1		REMOVED HANGER 1-08-400A-H4044
98615C	1		REMOVED HANGER 1-08-401A-H4045
98615C	1		REMOVED HANGER 1-08-1-0-401A-H6
98615C	1		REMOVED HANGER 1-08-1-0-401A-H7
98615C	1		REMOVED HANGER 1-08-1-0-400A-H5
98615C	1		REMOVED HANGER 1-08-400A-DE001
98445C	1		REMOVED HANGER 1-67-4408-H5319
98808C	1		INSTALL NEW HANGER 1-64-479D-H6415
98808C	1		MODIFIED HANGER 1-64-479D-H6347
98808C	1		INSTALLED NEW HANGER 1-64-479D-H6417
98808C	1		INSTALLED NEW HANGER 1-64-479D-H6416
51717J	1		INSTALLED NEW HANGER 1-51A-479A-H6418

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
51718J	1		INSTALLED NEW HANGER 1-51A-479A-H6419
51808J	1		INSTALLED NEW HANGER 1-61-429A-H5624
51809J	1		INSTALLED NEW HANGER 1-61-439A-H5625
95338B	1		MODIFIED HANGER 1-GH-RS-7273-01
95338B	1		MODIFIED HANGER 1-GH-RS-7172-01
95338B	1		MODIFIED HANGER 1-GH-RS-7172-02
95338B	1		MODIFIED HANGER 1-GH-QR-6970-02
95338B	1		MODIFIED HANGER 1-GH-ST-7172-02
95338B	1		MODIFIED HANGER 1-GH-RS-7071-04
95338B	1		MODIFIED HANGER 1-GH-RBU-7071-04
95338B	1		REMOVED HANGER 1-GH-UV-7071-07
95338B	1		MODIFIED HANGER 1-04A-2-0-439B-R3
98794C	1		REMOVED HANGER 1-01A-0-550-R1
97357C	1		MODIFIED HANGER 1-54A-3-0-435B-RS
98460C	1		MODIFIED HANGER 1-51A-0-479A-EKK-H1701
98460C	1		MODIFIED HANGER 0-1-55-479F-H6413
98460C	1		MODIFIED HANGER 1-50-0-66A-RCPM-510

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
98460C	1		MODIFIED HANGER 1-51A-0-479A-H6167
98460C	1		MODIFIED HANGER 1-50-0-66A-RCPM-512
98460C	1		MODIFIED HANGER 1-50-0-66A-RCPM-511
98703C	1		MODIFIED HANGER 1-07A-400B-SR20
98615C	1		REMOVED HANGER 1-08-401A-H4047
98615C	1		REMOVED HANGER 1-08-401A-H4046
95338B	1		MODIFIED HANGER 1-GH-HJ-2223-01
95338B	1		MODIFIED HANGER 1-GH-HJ-2223-02
95338B	1		MODIFIED HANGER 1-GH-HJ-2324-03
95338B	1		MODIFIED HANGER 1-GH-RBU-7071-01
95338B	1		INSTALLED HANGER 1-GH-RS-7071-02
95338B	1		MODIFIED HANGER 1-GH-ST-7273-03
95338B	1		INSTALLED HANGER 1-GH-UV-7071-02
95338B	1		INSTALLED HANGER 1-GH-ST-7071-01
95338B	1		INSTALLED HANGER 1-GH-VW-7071-02
95338B	1		MODIFIED HANGER 1-GH-VW-7071-03
95338B	1		MODIFIED HANGER 1-GH-VW-7071-06

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95338B	1		INSTALLED HANGER 1-GH-WX-6970-01
95338B	1		MODIFIED HANGER 1-GH-TRB-7071-02
95338B	1		MODIFIED HANGER 1-GH-RS-7071-03
95338B	1		MODIFIED HANGER 1-GH-ST-7172-01
95338B	1		MODIFIED HANGER 1-GH-UV-7071-04
95338B	1		REMOVED HANGER 1-GH-QR-7071-04
95338B	1		MODIFIED HANGER 1-GH-RS-6970-01
95338B	1		MODIFIED HANGER 1-GH-QR-6667-02
95338B	1		MODIFIED HANGER 1-GH-QR-7071-01
95338B	1		INSTALLED HANGER 1-GH-LM-2324-02
95338B	1		INSTALLED HANGER 1-GH-WX-7071-06
95338B	1		MODIFIED HANGER 1-GH-VW-7071-01
95338B	1		MODIFIED HANGER 1-GH-WX-7071-03
95338B	1		MODIFIED HANGER 1-GH-VW-7071-07
95338B	1		INSTALLED HANGER 1-GH-UV-7071-01
95338B	1		MODIFIED HANGER 1-GH-RBU-7071-03
95338B	1		MODIFIED HANGER 1-GH-ST-7273-04

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95338B	1		INSTALLED HANGER 1-GH-QR-6970-01
95338B	1		INSTALLED HANGER 1-GH-QR-6970-03
95338B	1		MODIFIED HANGER 1-GH-RBU-7071-02
95338B	1		MODIFIED HANGER 1-GH-VW-7071-04
95338B	1		MODIFIED HANGER 1-GH-PQ-6667-02
95338B	1		MODIFIED HANGER 1-GH-RS-7071-06
95338B	1		REMOVED U-BOLT ON HANGER 1-GH-ST-7071-05
95338B	1		MODIFIED HANGER 1-GH-CO-1718-01
95338B	1		ADDED MISSING CLEVIS TO HANGER 1-GH-CO-2223-02
95338B	1		MODIFIED HANGER 1-GH-FG-2324-01
95338B	1		MODIFIED HANGER 1-GH-F6-2324-02
95338B	1		MODIFIED HANGER 1-GH-GH-2324-01
95120B	1		REMOVED HANGER 1-53B-2-0-439B-H54
95120B	1		MODIFIED HANGER 1-53B-5-0-435B-R25
95120B	1		REMOVED HANGER 1-53B-5-0-439C-H32
95120B	1		REMOVED HANGER 1-54A-0-435B-H14

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
951208	1		REMOVED HANGER 1-54A-1-0-435B-H11
951208	1		MODIFIED HANGER 1-53B-4-0-435B-H13
951208	1		INSTALLED HANGER 1-53B-435B-DE079
951208	1		MODIFIED HANGER 1-53B-4-0-444-H64
951208	1		INSTALLED HANGER 1-53B-0-435B-DE059
951208	1		MODIFIED HANGER 1-53B-0-436D-DE060
951208	1		INSTALLED HANGER 1-53B-0-435B-DE058
951208	1		INSTALLED HANGER 1-53B-5-0-439C-R21
951208	1		MODIFIED HANGER 1-53B-435B-DE023
953388	1		MODIFIED HANGER 1-GH-ST-7172-05
953388	1		MODIFIED HANGER 1-GH-WX-7071-02
953388	1		MODIFIED HANGER 1-GH-ST-7071-02
953388	1		MODIFIED HANGER 1-GH-BC-2122-01
953388	1		MODIFIED HANGER 1-GH-KL-2223-01
953388	1		MODIFIED HANGER 1-GH-KL-2324-01
953388	1		INSTALLED HANGER 1-GH-LM-2324-01

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		MODIFIED HANGER 1-53B-438C-H5586
95120B	1		INSTALLED HANGER 1-53B-438C-H5587
95120B	1		INSTALLED HANGER 1-53B-439C-H5603
95120B	1		MODIFIED HANGER 1-53B-5-0-438A-H55
95120B	1		MODIFIED HANGER 1-53B-5-0-439B-H57
95120B	1		MODIFIED HANGER 1-53B-5-0-439B-R31
95120B	1		MODIFIED HANGER 1-53B-5-0-436F-R34
95120B	1		INSTALLED HANGER 1-53B-439B-RTB-2601
95120B	1		INSTALLED HANGER 1-53B-439B-RTB-2602
95120B	1		REMOVED HANGER 1-53B-0-439A-H58
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H38
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H39
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H40
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H42
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H43
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H44

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H45
95120B	1		MODIFIED HANGER 1-53B-5-0-439C-H46
95120B	1		REMOVED HANGER 1-53B-2-0-439B-H52
95120B	1		MODIFIED HANGER 1-53B-439C-DE097
95120B	1		INSTALLED HANGER 1-53B-0-435B-DE056
95120B	1		MODIFIED HANGER 1-53B-5-0-436-H8
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-H17
95120B	1		MODIFIED HANGER 1-53B-3-0-444-H65
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-R22
95120B	1		MODIFIED HANGER 1-53B-5-0-444-DE099
95120B	1		MODIFIED HANGER 1-53B-5-0-435B-R24
95120B	1		REMOVED HANGER 1-53B-435B-DE038
95120B	1		INSTALLED HANGER 1-53B-0-438B-DE050
95120B	1		INSTALLED HANGER 1-53B-0-437B-DE051
95120B	1		INSTALLED HANGER 1-53B-0-437B-DE052
95120B	1		INSTALLED HANGER 1-53B-0-438C-DE055

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		MODIFIED HANGER 1-53B-3-0-437B-H25
95120B	1		INSTALLED HANGER 1-53B-3-0-438C-H26
95120B	1		MODIFIED HANGER 1-53B-0-437B-ARM-0279
95120B	1		REMOVED HANGER 1-53B-0-438C-0E011
95120B	1		REMOVED HANGER 1-53B-3-0-439C-H27
95120B	1		REMOVED HANGER 1-53B-0-438C-0E014
95120B	1		REMOVED HANGER 1-53B-3-0-439C-H28
95120B	1		REMOVED HANGER 1-53B-0-438C-0E004
95120B	1		INSTALLED HANGER 1-53B-5-0-435-R7
95120B	1		INSTALLED HANGER 1-53B-5-0-435-R8
95120B	1		ADDED SHIMS TO HANGER 1-53B-5-0-444-R10
95120B	1		ADDED SHIMS TO HANGER 1-53B-5-0-444-R11
95120B	1		MODIFIED HANGER 1-53B-3-0-444-R3
95120B	1		INSTALLED HANGER 1-53B-5-0-444-R12
95120B	1		INSTALLED HANGER 1-53B-5-0-439-R14
95120B	1		INSTALLED HANGER 1-53B-5-0-439C-R15

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-R16
95120B	1		MODIFIED HANGER 1-53B-0-435B-R26
95120B	1		INSTALLED HANGER 1-53B-0-436D-DJB-R2401
95120B	1		INSTALLED HANGER 1-53B-438C-TLN-0701
95120B	1		INSTALLED HANGER 1-53B-438C-TLN-0702
95120B	1		INSTALLED HANGER 1-11-0-438C-DE004
95120B	1		REMOVED HANGER 1-53B-438C-DE098
95120B	1		REMOVED HANGER 1-53B-439C-RPP-2901
95120B	1		REMOVED HANGER 1-53B-5-0-436D-R32
95120B	1		REMOVED HANGER 1-53B-438C-DE002
95120B	1		REMOVED HANGER 1-53B-5-0-444-R23
95120B	1		INSTALLED HANGER 1-53B-435B-DE044
95120B	1		INSTALLED HANGER 1-53B-438C-DE005
95120B	1		INSTALLED HANGER 1-53B-438C-DE007
95120B	1		INSTALLED HANGER 1-53B-435B-DE025
95120B	1		INSTALLED HANGER 1-53B-0-438C-DE057

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		MODIFY HANGER 1-53B-5-0-435B-H1
95120B	1		ADJUSTED CLAMP STEEING HANGER 1-53B-5-0-444-H2
95120B	1		MODIFIED HANGER 1-53B-5-0-444-H6
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-H13
95120B	1		INSTALLED HANGER 1-53B-6-0-439C-H13
95120B	1		INSTALLED HANGER 1-53B-6-0-439C-H14
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-H16
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-H19
95120B	1		MODIFIED HANGER 1-53B-5-0-436D-H23
95120B	1		REPLACED SPRING CAN HANGER 1-53B-0-436D-EMD-H30
95120B	1		MODIFIED HANGER 1-53A-5-0-439C-H33
95120B	1		INSTALLED HANGER 1-53B-5-0-439B-H50
95120B	1		INSTALLED HANGER 1-53B-0-439A-H59
95120B	1		INSTALLED HANGER 1-53B-5-0-435B-H67
95120B	1		INSTALLED HANGER 1-53B-5-0-436B-R5
95120B	1		MODIFIED HANGER 1-53B-5-0-435-R6

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		INSTALLED HANGER 1-53B-4-0-435B-H28
95120B	1		MODIFIED HANGER 1-53B-4-0-435B-H29
95120B	1		MODIFIED HANGER 1-53B-4-0-435B-H30
95120B	1		MODIFIED HANGER 1-54A-1-0-435B-H34
95120B	1		MODIFIED HANGER 1-54A-1-0-435B-H35
95120B	1		INSTALLED HANGER 1-54A-1-0-435B-H36
95120B	1		INSTALLED SHIM 1-53B-2-0-435B-H38
95120B	1		MODIFIED HANGER 1-53B-4-0-444-H62
95120B	1		MODIFIED HANGER 1-53B-4-0-436-H63
95120B	1		MODIFIED HANGER 1-53B-4-0-444-R1
95120B	1		MODIFIED HANGER 1-53B-3-0-444-R4
95120B	1		MODIFIED HANGER 1-53B-0-435B-R35
95120B	1		INSTALLED HANGER 1-53-438C-TWE-2879
95120B	1		REMOVED HANGER 1-53B-438C-DE077
95120B	1		REMOVED HANGER 1-51A-438C-CWD-2801
95120B	1		REMOVED HANGER 1-53B-438C-TWE-2769

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		REMOVED HANGER 1-53B-438C-0E076
95120B	1		REMOVED HANGER 1-53B-438C-TWE-2779
95120B	1		REMOVED HANGER 1-53B-3-0-436-R2
95120B	1		REMOVED HANGER 1-53B-0-435B-0E080
96224B	1		MODIFIED HANGER 1-51A-439A-RD-2500
98556C	1		MODIFIED HANGER 1-56-0-443-SR25
25770C	1		REPAIRED SNUBBER HANGER 1-54A-0-439A-R16
95120B	1		INSTALLED HANGER 1-53B-438C-0E070
95120B	1		INSTALLED HANGER 1-53B-5-0-436D-H9
95120B	1		INSTALLED HANGER 1-54A-435B-0E09
95120B	1		INSTALLED HANGER 1-53B-435B-0E024
95120B	1		INSTALLED HANGER 1-53B-0-435B-0E061
95120B	1		INSTALLED HANGER 1-53B-0-435B-0E062
95120B	1		INSTALLED HANGER 1-53B-0-535B-0E063
95120B	1		INSTALLED HANGER 1-53B-0-435B-0E064
95120B	1		INSTALLED HANGER 1-53B-0-435B-0E065

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95120B	1		INSTALLED HANGER 1-53B-0-435B-DE066
95120B	1		INSTALLED HANGER 1-53B-0-435B-DE067
95120B	1		INSTALLED HANGER 1-53B-0-435B-DE068
95120B	1		INSTALLED HANGER 1-53B-0-435B-DE069
95120B	1		MODIFIED HANGER 1-53B-2-0-436E-H1
95120B	1		MODIFIED HANGER 1-53B-2-0-436E-H3
95120B	1		INSTALLED HANGER 1-53B-7-0-436E-H11
95120B	1		MODIFIED HANGER 1-53B-4-0-435B-H12
95109B	1		MODIFIED HANGER 1-14B-0-444-A5R11
95109B	1		REMOVED HANGER 1-14B-439A-RB-0702
95109B	1		MODIFIED HANGER 1-14B-437A-5R39
95109B	1		REMOVED HANGER 1-14B-439A-DE115
95109B	1		MODIFIED HANGER 1-14B-400B-DE076
95109B	1		MODIFIED HANGER 1-14B-0-436E-A5R16
95109B	1		MODIFIED HANGER 1-14B-439A-5R57
95109B	1		MODIFIED HANGER 1-14B-0-436L-A5R13

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95109B	1		MODIFIED HANGER 1-14B-0-436L-A5R14
95109B	1		MODIFIED HANGER 1-14B-400I-LRM-0601
96224B	1		MODIFIED HANGER 1-51-0-439A-DE098
96224B	1		MODIFIED HANGER 1-51-0-439C-DE095
96224B	1		INSTALLED HANGER 1-53B-0-439C-DE053
96224B	1		INSTALLED HANGER 1-14B-0-1444-A5R19
96224B	1		MODIFIED HANGER 1-14B-0-439C-A5R9
96224B	1		MODIFIED HANGER 1-53B-438C-DE075
96224B	1		MODIFIED HANGER 1-14B-0-439A-A5R10
96224B	1		MODIFIED HANGER 1-07A-4008-TLM-2116
96224B	1		MODIFIED HANGER 1-14B-0-2436D-A5R-24
96224B	1		MODIFIED HANGER 1-14B-0-1436C-A5R21
95337B	1		MODIFIED HANGER 1-56-2-0-437B-H35
95337B	1		REPLACED HANGER 1-56-2-0-437B-H34
95337B	1		REPLACED HANGER 1-56-2-0-437B-H33
95337B	1		MODIFIED HANGER 1-51A-438C-DE094

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95337B	1		MODIFIED HANGER 1-SS-5-0-4378-H47
95109B	1		MODIFIED HANGER 1-14B-437A-SR61
95109B	1		MODIFIED HANGER 1-14B-436D-DE063
95109B	1		MODIFIED HANGER 1-14B-436L-WJB-1002
95109B	1		MODIFIED HANGER 1-14B-0-400G-RWC-1303
95109B	1		MODIFIED HANGER 1-14B-0-400G-RWC-1302
95109B	1		INSTALLED HANGER 1-14B-439B-RB-0501
95109B	1		ADDED LOCK NUT HANGER 1-14B-0-436E-MKP-0506
95109B	1		REMOVED HANGER 1-14B-0-436E-MKP-0504
95109B	1		REMOVED HANGER 1-14B-0-400I-LRM-0602
95109B	1		MODIFIED HANGER 1-14B-0-1436D-ASR-23
95109B	1		MODIFIED HANGER 1-14B-0-1436D-ASR-22
95109B	1		REMOVED HANGER 1-14B-0-444-ASR12
95109B	1		MODIFIED HANGER 1-14B-0-444-ASR7
95109B	1		MODIFIED HANGER 1-14B-0-436L-ASR15
95109B	1		MODIFIED HANGER 1-14B-437A-DE055

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		REPLACED HANGER 1-01A-0-401B-JWC-1701
97521	1		MODIFIED HANGER 1-01A-0-401B-JWC-1702
97521	1		INSTALLED HANGER 1-01A-0-401B-DE035
97521	1		REPLACED HANGER 1-01A-0-401B-DE034
97521	1		REPLACED HANGER 1-01A-0-401A-DE019
97521	1		READJUSTED SNUBBER SETTING 1-01A-2-1-0-401A-SR1
97521	1		MODIFIED HANGER 1-01A-0-550-R12
97521	1		INSTALLED HANGER 1-01A-0-401B-DE033
97521	1		MODIFIED HANGER 1-01A-0-401A-DE032
97521	1	I	INSTALLED HANGER 1-GH-BC-2223-02
95066B	1		INSTALLED HANGER 1-54A-3-0-439C-H7
0535821	1		READJUSTED HANGER 1-03A-1-0-400B-H165
54246H	1		DISCONNECTED/RECONNECTED U-BOLT HANGER 1-15-437F-H5189
95109B	1		OLD REMOVED/WITH NEW REPLACED HANGER 1-14B-437B-DE020
95109B	1		MODIFIED HANGER 1-14B-437A-SR52
95109B	1		INSTALLED HANGER 1-14B-437A-SR49

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95109B	1		MODIFIED HANGER 1-14B-437A-SR40
95109B	1		OLD REMOVED/WITH NEW REPLACED HANGER 1-14B-437A-SR38
95109B	1		INSTALLED SHIM HANGER 1-14B-0-4008-SR33
95109B	1		OLD REMOVED/WITH NEW REPLACED HANGER 1-14B-437B-DE021
95092B	1		MODIFIED HANGER 1-55-1-0-437B-H12
95092B	1		MODIFIED HANGER 1-55-1-0-444-H49
95109B	1		REMOVED HANGER 1-14B-439B-RMC-0504
95109B	1		INSTALLED 1-14B-1-0-439B-H20
95109B	1		REMOVED/REPLACED HANGER 1-14B-439B-RB-0901
95109B	1		REMOVED/REPLACED HANGER 1-14B-439B-DE004
95109B	1		MODIFIED HANGER 1-14B-436D-SR41
95109B	1		INSTALLED HANGER 1-14B-439B-RJC-0601
95109B	1		REMOVED/REPLACED HANGER 1-14B-439B-DE005
95109B	1		INSTALLED HANGER 1-14B-1-0-439B-DE140
95109B	1		REMOVED HANGER 1-14B-439B-DE006
95109B	1		INSTALLED HANGER 1-14B-0-439B-RMC-0503
95109B	1		REMOVED/REPLACED HANGER 1-14B-5-0-1444-H15

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95109B	1		INSTALLED HANGER 1-14B-0-439B-DE138
95109B	1		REMOVED HANGER 1-14B-439B-JEJ-0803
95109B	1		MODIFIED HANGER 1-14B-439B-SR42
95109B	1		REMOVED/REPLACED HANGER 1-14B-0-400B-SR34
95109B	1		INSTALLED HANGER 1-14B-0-439B-DE136
95109B	1		INSTALLED HANGER 1-14B-400B-DE096
95109B	1		INSTALLED HANGER 1-14B-437B-SR25
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H3
97521	1		MODIFIED HANGER 1-01A-1-4-0-401B-H27
97521	1		INSTALLED HANGER 1-01A-1-4-0-401B-H28
97521	1		INSTALLED HANGER 1-01A-1-4-0-401A-H18
95109B	1		REMOVED/REPLACED HANGER 1-14B-1-0-439B-SR43
95109B	1		INSTALLED HANGER 1-14B-0-439B-H7
95109B	1		MODIFIED HANGER 1-14B-437A-DE042
95109B	1		MODIFIED HANGER 1-14B-437A-DE041
95109B	1		MODIFIED HANGER 1-14B-437A-DE039

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95109B	1		MODIFIED HANGER 1-14B-437A-DE036
95109B	1		REPLACED HANGER 1-14B-0-437B-DE024
95109B	1		REMOVED HANGER 1-14B-436D-WJB-1201
95109B	1		MODIFIED HANGER 1-14B-437B-DE023
95109B	1		MODIFIED HANGER 1-14B-0-1444-ASR18
95109B	1		REMOVED HANGER 1-14B-0-437A-SR53
95109B	1		MODIFIED HANGER 1-14B-0-439B-SR52
95109B	1		REMOVED/REPLACED HANGER 1-14B-439B-RJC-0602
95109B	1		REMOVED HANGER 1-14B-439B-JEJ-0801
95109B	1		REMOVED HANGER 1-14B-439B-JEJ-0802
95109B	1		INSTALLED HANGER 1-14B-0-439B-SR55
95109B	1		INSTALLED HANGER 1-14B-1-0-439B-DE139
95109B	1		MODIFIED HANGER 1-14B-0-436F-H25
95109B	1		REMOVED HANGER 1-14B-0-437B-H18
95109B	1		REMOVED HANGER 1-14B-0-437B-H17
95109B	1		REMOVED HANGER 1-14B-1-0-444-H6

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95109B	1		REPLACED HANGER 1-14B-1-0-439B-H10
95109B	1		MODIFIED HANGER 1-14B-1-0-439B-H5
95109B	1		MODIFIED HANGER 1-14B-1-0-439B-H4
95109B	1		INSTALLED HANGER 1-14B-1-0-437A-H1
95109B	1		INSTALLED HANGER 1-14B-0-4378-SR27
95109B	1		MODIFIED HANGER 1-14B-400B-DE095
95109B	1		INSTALLED HANGER 1-14B-400B-DE075
95109B	1		ADJUSTED HANGER 1-14B-400B-DE070
95109B	1		MODIFIED HANGER 1-14B-400B-DE074
95109B	1		MODIFIED HANGER 1-14B-400B-DE068
95109B	1		INSTALLED HANGER 1-14B-436D-DE065
95109B	1		MODIFIED HANGER 1-14B-437A-DE061
95109B	1		MODIFIED HANGER 1-14B-437A-DE058
95109B	1		ADDED SHIM, HANGER 1-14B-0-439B-SR46
95109B	1		INSTALLED HANGER 1-14B-1-0-439B-DE141
95121B	1		INSTALLED HANGER 1-51A-1-0-438A-H71

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		INSTALLED HANGER 1-51-0-439A-SR39
95121B	1		MODIFY HANGER 1-51-0-439A-SR40
95121B	1		INSTALL HANGER 1-51-0-437B-ARM-2102
95121B	1		INSTALL HANGER 1-51-0-435C-DE064
95121B	1		INSTALL HANGER 1-51-0-439C-LC-2504
95121B	1		INSTALL HANGER 1-51-0-438A-DE054
95121B	1		INSTALL HANGER 1-51-0-435C-DE065
95121B	1		INSTALL HANGER 1-51-0-437B-DE042
95121B	1		INSTALL HANGER 1-51-0-436D-JTC-0401
95121B	1		INSTALL HANGER 1-51-435E-DE101
95121B	1		MODIFIED HANGER 1-51-0-444-SR48
95121B	1		MODIFIED HANGER 1-51-4-0-437A-H52
95121B	1		MODIFIED HANGER 1-51-0-439C-SR45
95121B	1		INSTALL HANGER 1-51-1-0-438C-DE038
95121B	1		INSTALL HANGER 1-51-1-0-437B-DE037
95121B	1		INSTALL HANGER 1-51-0-438C-SR30
95121B	1		MODIFIED HANGER 1-51-0-437B-SR24

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		MODIFIED HANGER 1-51-0-437B-SR23
95121B	1		MODIFIED HANGER 1-51-0-436H-SR17
95121B	1		MODIFY HANGER 1-51-0-444-SR52
95121B	1		MODIFY HANGER 1-51-0-436H-SR3
95121B	1		INSTALLED HANGER 1-51-0-436H-SR18
95121B	1		INSTALLED HANGER 1-51-0-436H-H61
95121B	1		MODIFY HANGER 1-51-0-436D-SR11
95121B	1		MODIFY HANGER 1-51-0-436H-SR19
95121B	1		REMOVED 1-51-0-439C-DE072
95121B	1		INSTALLED HANGER 1-51-0-438A-SR26
95121B	1		INSTALLED HANGER 1-51-0-438A-SR28
95121B	1		INSTALLED HANGER 1-51-0-437B-ARM-2004
95121B	1		INSTALLED HANGER 1-51-0-437A-SR31
95121B	1		INSTALLED HANGER 1-51-0-439A-SR38
95121B	1		INSTALLED HANGER 1-51-1-0-435B-DE093
95121B	1		INSTALLED HANGER 1-51-437B-ARM-2003
95121B	1		INSTALLED HANGER 1-51-0-439C-SR43
95121B	1		MODIFY HANGER 1-51-0-439C-SR46

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		MODIFY HANGER 1-51-0-444-5R51
95121B	1		INSTALLED HANGER 1-51-0-444-5R56
95121B	1		INSTALLED HANGER 1-51-0-436D-JTC-0402
95121B	1		MODIFY HANGER 1-51-0-439C-5R47
95121B	1		MODIFY HANGER 1-51-0-439B-RHG-2806
95121B	1		MODIFY HANGER 1-51-0-435C-5R4
95121B	1		MODIFY HANGER 1-51-0-435C-5R5
95121B	1		REMOVED HANGER 1-51-0-439B-RHG-2808
95121B	1		INSTALLED HANGER 1-51-437B-ARM-2002
95121B	1		REMOVED HANGER 1-51-0-438C-5R31
95121B	1		MODIFY HANGER 1-51A-0-435C-DE001
95121B	1		MODIFY HANGER 1-51A-0-439B-DE012
95121B	1		MODIFY HANGER 1-51A-0-439C-H87
95121B	1		MODIFY HANGER 1-51A-1-0-439B-H67
95121B	1		MODIFY HANGER 1-51A-1-0-439B-H66
95121B	1		INSTALLED HANGER 1-51A-40-437A-H49
95121B	1		MODIFY HANGER 1-51A-1-0-439A-H27
95121B	1		INSTALLED HANGER 1-51A-1-0-439C-H17

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		INSTALLED HANGER 1-51A-1-0-439C-H13
95121B	1		MODIFIED HANGER 1-51A-1-0-437B-H5
95121B	1		MODIFY HANGER 1-51A-1-0-444-H2
95121B	1		MODIFY HANGER 1-51A-439C-DM-2003
95121B	1		INSTALLED HANGER 1-51A-1-0-439B-DE079
95121B	1		1-51A-439C-DE073
95121B	1		INSTALLED HANGER 1-51A-1-0-439B-DE057
95121B	1		INSTALLED HANGER 1-51A-0-438A-DE056
95121B	1		INSTALLED HANGER 1-51A-0-438A-DE053
95121B	1		INSTALLED HANGER 1-51A-0-438A-DE052
95121B	1		INSTALLED HANGER 1-51A-0-438A-DE050
95121B	1		INSTALLED HANGER 1-51A-438A-DE048
95121B	1		INSTALLED HANGER 1-51A-437A-DE044
95121B	1		INSTALLED HANGER 1-51A-437A-DE043
95121B	1		INSTALLED HANGER 1-51A-437A-DE041
95121B	1		INSTALLED HANGER 1-51A-437A-DE040
95121B	1		INSTALLED HANGER 1-51A-444-DE039

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		INSTALLED HANGER 1-51A-439C-DE030
95121B	1		MODIFY HANGER 1-51A-439C-DE022
95121B	1		INSTALLED HANGER 1-51A-439C-DE029
95121B	1		MODIFY HANGER 1-51A-439C-DE021
95121B	1		MODIFY HANGER 1-51A-439B-DE013
95121B	1		INSTALLED HANGER 1-51A-439C-DE012
95121B	1		INSTALLED HANGER 1-51A-439C-DE011
95121B	1		INSTALLED HANGER 1-51A-439B-DE011
95121B	1		INSTALLED HANGER 1-51A-439B-DE010
95121B	1		MODIFY HANGER 1-51A-439B-DE007
95121B	1		INSTALL HANGER 1-51A-439C-DE005
95121B	1		MODIFY HANGER 1-51A-439C-DE004
95121B	1		INSTALL HANGER 1-51A-439C-DE003
95121B	1		INSTALL HANGER 1-51A-437A-DE003
95121B	1		INSTALL HANGER 1-51A-435B-DE002
95121B	1		INSTALL HANGER 1-51A-437A-DE002
95121B	1		MODIFY HANGER 1-51A-0-435C-DE001A
95121B	1		MODIFY HANGER 1-51A-438C-BSM-2001

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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		INSTALL HANGER 1-51A-1-0-439A-RD-2501
95121B	1		MODIFY HANGER 1-51A-0-437B-ARM-2006
95121B	1		REMOVED HANGER 1-51A-0-439C-DE036
95121B	1		REMOVED HANGER 1-51A-0-439C-DM-2001
95121B	1		REMOVED HANGER 1-51A-435C-DE090
95121B	1		REMOVED HANGER 1-51A-439A-LME-2003
95121B	1		REMOVED HANGER 1-51A-0-439B-RHG-2803
95121B	1		REMOVED HANGER 1-51A-0-439B-RHG-2804
95121B	1		REMOVED HANGER 1-51A-439C-DE032
95121B	1		REMOVED HANGER 1-51A-439C-DE033
95121B	1		REMOVED HANGER 1-51A-0-439C-DE034
95121B	1		REMOVED HANGER 1-51A-439C-DE031
95121B	1		REMOVED HANGER 1-51A-439C-DE001
95121B	1		REMOVED HANGER 1-51A-439C-DE009
95121B	1		REMOVED HANGER 1-51A-0-439B-RHG-2802
95121B	1		REMOVED HANGER 1-51A-439B-DE008

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
951218	1		REMOVED HANGER 1-51A-0-439B-RHG-2801
951218	1		REMOVED HANGER 1-51A-LME-2006
951218	1		REMOVED HANGER 1-51A-0-439A-LME-2005
951218	1		REMOVED HANGER 1-51A-LME-2004
951218	1		REMOVED HANGER 1-51A-0-439E-LC-2402
951218	1		REMOVED HANGER 1-51A-435C-DE089
951218	1		REMOVED HANGER 1-51A-439A-JWC-1901
951218	1		REMOVED HANGER 1-51A-0-437B-ARM-2103
951218	1		MODIFY HANGER 1-51A-439B-DE006
951218	1		INSTALL HANGER 1-51A-1-0-438C-H9
951218	1		INSTALL HANGER 1-51A-439C-DE006
951218	1		INSTALL HANGER 1-51A-1-0-439B-DE055
951218	1		INSTALL HANGER 1-51B-436H-DE019
951218	1		INSTALL HANGER 1-51B-436H-DE020
951218	1		INSTALL HANGER 1-51B-436H-DE021
951218	1		INSTALL HANGER 1-51B-436H-DE014
951218	1		MODIFY HANGER 1-51B-436H-DE002
951218	1		INSTALL HANGER 1-51B-436H-DE069

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		INSTALL HANGER 1-51B-436H-DE010
95121B	1		INSTALL HANGER 1-51B-2-0-436G-DE002
95121B	1		MODIFY HANGER 1-51B-2-0-436G-DE045
95121B	1		INSTALL HANGER 1-51B-2-0-437A-DE051
95121B	1		MODIFY HANGER 1-51B-436H-DE001
95121B	1		REMOVE HANGER 1-51A-435C-DE002
95121B	1		REMOVE HANGER 1-51B-2-0-437A-H35
95121B	1		REMOVE HANGER 1-51B-2-0-436D-H43A
95121B	1		REMOVE HANGER 1-51-439E-LC-2401
95121B	1		REMOVE HANGER 1-51B-2-0-436D-H43
95121B	1		MODIFY HANGER 1-51B-2-0-436D-H42
95121B	1		MODIFY HANGER 1-51B-436E-5R66
95121B	1		INSTALL HANGER 1-51B-2-0-436E-5R65
95121B	1		INSTALL HANGER 1-51-0-437B-ARM-2101
95121B	1		REMOVE HANGER 1-51B-2-0-437A-H36
95121B	1		INSTALL HANGER 1-51B-436H-DE003
95121B	1		MODIFY HANGER 1-51-0-437B-5R22
95121B	1		MODIFY HANGER 1-51-0-438A-5R27

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		MODIFY HANGER 1-51-0-436H-H60
95121B	1		INSTALL HANGER 1-51B-436H-DE016
95121B	1		MODIFY HANGER 1-51B-436H-DE017
95121B	1		INSTALL HANGER 1-51B-436H-DE018
95121B	1		MODIFY HANGER 1-51B-436H-DE015
95121B	1		INSTALL HANGER 1-51B-436H-DE009
95121B	1		INSTALL HANGER 1-51B-2-0-437A-DE091
95121B	1		REMOVE HANGER 1-53A-1-436D-DJB-2701
95121B	1		INSTALL HANGER 1-54A-435B-DE13
95121B	1		INSTALL HANGER 1-53B-0-435C-DE087
95121B	1		MODIFY HANGER 1-53B-5-0-436D-H20
95121B	1		INSTALL HANGER 1-53B-5-0-436D-H24A
95121B	1		REMOVE HANGER 1-53B-2-0-436E-H8
95121B	1		REMOVE HANGER 1-53B-2-0-436E-H9
95121B	1		MODIFY HANGER 1-53B-2-0-436E-H10
95121B	1		MODIFY HANGER 1-53B-5-0-436D-H10
95121B	1		INSTALL HANGER 1-53B-5-0-444-H5
95121B	1		MODIFY HANGER 1-53B-2-0-436E-H7

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95121B	1		MODIFIED HANGER 1-53B-2-0-436E-DE083
95121B	1		MODIFIED HANGER 1-53B-435C-DE063
95121B	1		MODIFIED HANGER 1-53B-435C-DE060
95121B	1		INSTALL HANGER 1-53B-435C-DE058
95121B	1		INSTALL HANGER 1-53B-435B-DE032
95121B	1		INSTALL HANGER 1-53B-435B-DE034
95121B	1		INSTALL HANGER 1-53B-435B-DE035
95121B	1		MODIFIED HANGER 1-53B-435C-DE020
95121B	1		REMOVED HANGER 1-51-436H-TLM-0601
95121B	1		REMOVED HANGER 1-51A-437A-RDJ-2101
95121B	1		REMOVED HANGER 1-51-0-437B-JW-2106
95121B	1		REMOVED HANGER 1-51-436H-JWC-1901
95121B	1		REMOVED HANGER 1-51B-436K-TLM-0401
95121B	1		REMOVED HANGER 1-51B-436G-DE003
95121B	1		MODIFIED HANGER 1-51-0-444-SR49
95121B	1		MODIFIED HANGER 1-51A-439C-DE025

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
951218	1		MODIFIED HANGER 1-51A-439C-DE026
951218	1		MODIFIED HANGER 1-54A-435B-DE03
951218	1		MODIFIED HANGER 1-538-0-5-0-436D-H12
950928	1		MODIFIED HANGER PER SKETCH 1-55-1-0-437B-H16
950928	1		INSTALLED HANGER 1-55-1-0-437B-H17
950928	1		MODIFIED HANGER 1-55-1-0-439C-H32
950928	1		MODIFIED HANGER 1-55-1-0-439C-H34
950928	1		MODIFIED HANGER 1-55-1-0-439B-H39A
950928	1		MODIFIED HANGER 1-55-1-0-439B-H40
950928	1		INSTALLED HANGER 1-55-1-0-439B-H42
950928	1		MODIFIED HANGER 1-55-1-0-437B-SR4
950928	1		INSTALLED HANGER 1-55-1-0-437B-SR5
950928	1		INSTALLED HANGER 1-55-1-0-439C-SR10
950928	1		MODIFIED HANGER 1-55-1-0-439C-SR12
950928	1		REMOVED HANGER 1-55-RJC-0-439C-2701
950928	1		MODIFIED HANGER 1-55-1-0-437B-SR3

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95092B	1		MODIFIED HANGER 1-55-1-0-439B-H43
95092B	1		ADJUSTED SPRING HANGER 1-55-1-0-439B-H44
95092B	1		MODIFIED HANGER 1-55-1-0-444-H50
95092B	1		INSTALLED HANGER 1-55-1-0-444-SR22
95092B	1		INSTALLED HANGER 1-55-1-0-439B-SR14
95092B	1		REPLACED HANGER 1-55-437B-JLS-2901
95092B	1		REMOVED HANGER 1-55-1-0-439A-H39
97521	1		MODIFIED HANGER 1-01A-400A-JEJ-1401
97521	1		MODIFIED HANGER 1-02A-1-0-403A-H12
97521	1		INSTALLED HANGER 1-01A-0-403A-DE066
97521	1		INSTALLED HANGER 1-01A-0-403A-JGM-1704
97521	1		INSTALLED HANGER 1-01A-0-403A-JGM-1703
97521	1		MODIFIED HANGER 1-01A-0-403A-JGM-1702
97521	1		MODIFIED HANGER 1-01A-0-403A-DE065
97521	1		MODIFIED HANGER 1-01A-0-550-R1
97521	1		MODIFIED HANGER 1-01A-4-2-0-400A-R11
97521	1		MODIFIED HANGER 1-01A-4-0-401A-H4

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UNIT 1, RFO-12
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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		MODIFIED HANGER 1-01A-4-2-0-403C-R2
97521	1		INSTALLED HANGER 1-01A-401A-0E008
97521	1		INSTALLED HANGER 1-01A-403C-0E002
97521	1		INSTALLED HANGER 1-01A-403C-0E003
97521	1		MODIFIED HANGER 1-01A-4-1-0-401A-H1
97521	1		REMOVED HANGER 1-01A-401B-JWC-2801
97521	1		REMOVED HANGER 1-01A-401B-JWC-1703
97521	1		MODIFIED HANGER 1-01A-401A-JGM-1002
97521	1		MODIFIED HANGER 1-01A-401A-JGM-1001
97521	1		REMOVED HANGER 1-01A-0-401A-TWE-1379
97521	1		MODIFY HANGER 1-01A-0-550-H15
97521	1		MODIFY HANGER 1-01A-0-550-R7
97521	1		MODIFY HANGER 1-01A-0-550-H14
97521	1		MODIFY HANGER 1-01A-0-550-H13
97521	1		INSTALLED HANGER 1-01A-0-550-0E006
97521	1		REMOVED HANGER 1-01A-0-403C-JH-1603
97521	1		REMOVED HANGER 1-01A-0-403C-JH-1602
97521	1		REMOVED HANGER 1-01A-0-403C-JH-1303

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		REMOVED HANGER 1-01A-0-403C-JH-1302
97521	1		REMOVED HANGER 1-01A-0-403C-JH-1301
97521	1		REMOVED HANGER 1-01A-4-2-0-403C-R4
97521	1		REMOVED HANGER 1-01A-0-403A-JGM-1707
97521	1		REMOVED HANGER 1-01A-4-2-0-403C-R5
97521	1		REMOVED HANGER 1-01A-0-403A-JGM-1708
97521	1		REMOVED HANGER 1-01A-0-403D-DE049
97521	1		REMOVED HANGER 1-01A-0-403D-DE043
97521	1		REMOVED HANGER 1-01A-4-2-0-403D-R14
97521	1		INSTALLED HANGER 1-01A-0-403C-JH-1601
97521	1		MODIFY HANGER 1-01A-0-403A-FAC-1705
97521	1		INSTALLED HANGER 1-01A-400K-KWW-0300
97521	1		MODIFY HANGER 1-01A-0-550-H5-2
97521	1		MODIFY HANGER 1-01A-0-550-R16
97521	1		INSTALLED HANGER 1-01A-0-550-H10
97521	1		REPLACED HANGER 1-01A-0-550-H24
97521	1		MODIFIED HANGER 1-01A-0-550-R13

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		INSTALLED HANGER 1-01A-0-550-R6
97521	1		REPLACED HANGER 1-01A-0-550-H9
97521	1		INSTALLED HANGER 1-01A-0-550-R5
97521	1		ADJUSTED COLD SET HANGER 1-01A-0-550-H21
97521	1		MODIFIED HANGER 1-01A-0-550-H7
97521	1		OFFSET PIPE CLAMP HANGER 1-01A-0-550-H8
97521	1		MODIFIED HANGER 1-01A-0-550-H20
97521	1		ADJUSTED SPRING CAN HANGER 1-01A-0-550-H19
97521	1		INSTALLED HANGER 1-01A-0-550-H6
97521	1		REPLACED HANGER 1-01A-0-550-R4
97521	1		ADJUSTED SPRING CAN HANGER 1-01A-0-550-H18
97521	1		INSTALLED HANGER 1-01A-0-550-DE005
97521	1		MODIFIED HANGER 1-01A-0-550-H17
97521	1		MODIFIED HANGER 1-01A-0-550-R9
97521	1		REPLACED HANGER 1-01A-0-550-R8
97521	1		REPLACED SPRING CAN HANGER 1-01A-0-401A-EMO-H14
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H41
97521	1		ADJUSTED SPRING CAN HANGER 1-01A-1-1-0-401A-H2

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H5
97521	1		REPLACED HANGER 1-01A-1-4-0-401A-H25
97521	1		INSTALLED HANGER 1-01A-1-4-0-401A-H24
97521	1		MODIFIED HANGER 1-01A-1-4-0-401A-H23
97521	1		MODIFIED HANGER 1-01A-1-4-0-401A-H22
97521	1		INSTALLED HANGER 1-01A-0-401A-DE071
97521	1		MODIFIED HANGER 1-01A-1-4-0-401A-H21
97521	1		MODIFIED HANGER 1-01A-1-2-0-401A-H39
97521	1		REPLACED HANGER 1-01A-1-2-401A-H50
97521	1		MODIFIED HANGER 1-01A-1-4-0-401B-H29
97521	1		REPLACED SPRING CANS HANGER 1-01A-1-4-0-401B-H30
97521	1		INSTALLED HANGER 1-01A-402B-DE073
97521	1		REPLACED HANGER 1-01A-1-4-0-401B-H31
97521	1		INSTALLED HANGER 1-01A-0-550-R11
97521	1		MODIFIED HANGER 1-01A-0-550-H23
97521	1		REMOVED HANGER 1-01A-0-441-R18
97521	1		REMOVED HANGER 1-01A-0-441-R17

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95337B	1		MODIFIED HANGER PER SKETCH 1-56-4-0-437B-H1
95337B	1		MODIFIED HANGER PER SKETCH 1-53B-438C-DE001
95337B	1		MODIFIED HANGER PER SKETCH 1-56-5-0-437B-H50
95337B	1		MODIFIED HANGER PER SKETCH 1-56-0-438C-DE024
95337B	1		INSTALLED HANGER 1-56-437B-JGM-0801
95337B	1		INSTALLED HANGER 1-56-438B-DE004
95337B	1		REMOVED HANGER 1-56-4-0-437B-H15
95337B	1		MODIFIED HANGER PER SKETCH 1-56-2-0-437B-H58
95337B	1		MODIFIED HANGER PER SKETCH 1-56-4-0-437B-DE037
95337B	1		MODIFIED HANGER PER SKETCH 1-56-4-0-437B-DE038
95337B	1		MODIFIED HANGER PER SKETCH 1-56-5-0-437B-H37
95337B	1		MODIFIED HANGER PER SKETCH 1-53B-438C-DE092
95337B	1		REALIGNED U-BOLT FOR LOOSE FIT 1-56-0-437B-RTB-1005
95337B	1		REPLACED HANGER 1-53B-438C-DE093
95337B	1		REALIGNED U-BOLT FOR LOOSE FIT 1-56-0-437B-RTB-1004
95337B	1		MODIFIED HANGER 1-56-4-0-437B-DE036

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95337B	1		MODIFIED HANGER 1-56-5-0-437B-TLM-1079
95337B	1		REPLACED HANGER 1-56-0-437B-SR20
95337B	1		INSTALLED HANGER 1-56-437B-DE017
95337B	1		MODIFIED HANGER 1-56-0-437B-SR17
97337B	1		MODIFIED HANGER 1-56-0-437B-SR9
95337B	1		MODIFIED HANGER 1-56-2-0-438C-H62
95337B	1		MODIFIED HANGER 1-56-438C-DE011
95337B	1		REPLACED HANGER 1-56-437D-DE014
95337B	1		MODIFIED HANGER 1-56-437B-DE020
95337B	1		MODIFIED HANGER 1-53B-438D-W55-2002
95337B	1		MODIFIED HANGER 1-53B-438D-W55-2001
95337B	1		MODIFIED HANGER 1-53B-438D-W55-2003
95337B	1		REMOVED HANGER 1-56-5-0-437B-H54
95337B	1		REMOVED HANGER 1-56-5-0-437B-H52
95337B	1		REALIGNED U-BOLT FOR LOOSE FIT 1-56-0-437B-SR8
95337B	1		REPLACED HANGER 1-56-5-0-437B-H39

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95337B	1		MODIFIED HANGER 1-56-5-0-437B-H36
95337B	1		MODIFIED HANGER 1-56-4-0-443-H65
95337B	1		REMOVED HANGER 1-JGM-56-0-437B-3001
95337B	1		MODIFIED HANGER 1-56-437B-REB-0701
95337B	1		MODIFIED HANGER 1-56-437B-JWC-1201
95337B	1		MODIFIED HANGER 1-53B-438C-LCC-1501
95337B	1		1-56-0-437B-RTB-1001
95337B	1		REPLACED HANGER 1-56-437B-JGM-0802
95065B	1		REPAIR HANGER 1-55-0-479A-H31C
97509	1		REPAIR HANGER 1-03-0-480A-H5A
97509	1		REPAIR HANGER 1-03-0-479A-H4A
97509	1		REPAIR HANGER 1-03-0-479A-H3B
97509	1		REPAIR HANGER 1-03-0-479A-H4B
97509	1		REPAIR HANGER 1-03-0-479A-H5B
97509	1		REPAIR HANGER 1-03-0-480A-H9B
97509	1		REPAIR HANGER 1-03-0-481A-H11B
97509	1		REPAIR HANGER 1-03-0-481A-H14B
97509	1		REPAIR HANGER 1-03-0-481A-H5B
97509	1		REPAIR HANGER 1-03-0-481A-H16B
97502	1		REPAIR HANGER 1-31-0-479D-DE001

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
97502	1		REPAIR HANGER 1-31-0-439C-DE002
97502	1		REMOVE HANGER 1-31-0-439C-JRL-3001
97508	1		REPLACE HANGER 1-53A-0-479A-H7A
97508	1		REPAIR HANGER 1-53A-0-478A-H6A
97508	1		REPAIR HANGER 1-53A-0-478A-H4A
97503	1		REPAIR HANGER 1-69-0-439C-DE004
97503	1		REMOVE HANGER 1-69-0-438C-DE001
95111B	1		REMOVE HANGER 1-07A-400B-GC-2610
95111B	1		REMOVED HANGER 1-07A-400B-GC-2607
95111B	1		REMOVED HANGER 1-07A-400B-GC-2605
95111B	1		REMOVED HANGER 1-07A-400B-GC-2603
95111B	1		REPAIR HANGER 2-07A-1400AA-JWC-1607
95111B	1		REPAIR HANGER 2-07A-1400B-JWC-0901
95111B	1		REPAIR HANGER 2-07A-1400B-JWC-0201
95111B	1		REPAIR HANGER 2-07A-1400A-JEJ-1604
95111B	1		REPAIR HANGER 1-07A-400B-GC-2613
92794C	1		REPLACED A325 BOLTING 1-64-439C-H5594

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95111B	1		REPAIR HANGER 1-07A-400B-GC-2611
95111B	1		REPAIR HANGER 1-07A-400B-GC-2604
95111B	1		REPAIR HANGER 1-07A-400B-GC-2601
95111B	1		REPAIR HANGER 1-07A-400B-DE068
95111B	1		REPAIR HANGER
95111B	1		INSTALLED HANGER 1-07A-400B-DE048
95111B	1		REMOVED HANGER 1-07A-400B-SR-64
95111B	1		REMOVED HANGER 1-07A-400B-TLM-2114
95111B	1		REMOVED HANGER 1-07A-400B-JME-2304
95111B	1		REMOVED HANGER 1-07A-402A-DE028
95111B	1		REMOVED HANGER 1-07A-402A-DE026
95111B	1		REMOVED HANGER 1-07A-400B-JME-2303
95111B	1		REMOVED HANGER 1-07A-400A-GTE-2101
95111B	1		REMOVED HANGER 1-07A-400B-DE063A
95111B	1		REMOVED HANGER 1-07A-400B-GTE-2001
95111B	1		REPLACED HANGER 1-07A-400A-GTE-2102
95111B	1		REPAIR HANGER 1-07A-400B-SR-11

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95111B	1		REPAIR HANGER 1-07A-400B-SR-9
95111B	1		REPAIR HANGER 1-07A-400B-SR-7
95111B	1		REPAIR HANGER 1-07A-400B-SR-5
95111B	1		REPAIR HANGER 1-07A-400A-SR-1
95111B	1		REPAIR HANGER 1-07A-402A-H8
95111B	1		REPAIR HANGER 1-07A-400B-DE058
95111B	1		INSTALLED HANGER 1-07A-400B-DE056
95111B	1		REPAIR HANGER 1-07A-400B-DE055
95111B	1		INSTALL HANGER 1-07A-400B-DE054
95111B	1		INSTALL HANGER 1-07A-402A-DE029
95111B	1		REPAIR HANGER 1-07A-402A-DE027
95111B	1		REPAIR HANGER 1-07A-400B-DE022
95111B	1		REPAIR HANGER 1-07A-400B-DE018
95111B	1		REPLACED HANGER 1-07A-400B-DE017
95111B	1		MODIFIED HANGER 1-07A-6-0-400A-H41
95111B	1		INSTALLED HANGER 1-07A-400B-DE047
95111B	1		INSTALLED HANGER 1-07A-400B-DE046
95111B	1		INSTALLED HANGER 1-07A-400B-DE049
95111B	1		MODIFY HANGER 1-07A-401A-RNF-2305
95111B	1		INSTALLED HANGER 1-07A-400A-RNF-2304

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95111B	1		MODIFY HANGER 1-07A-400A-RNF-2303
95111B	1		INSTALLED 1-07A-400A-RNF-2302
95111B	1		INSTALLED HANGER 1-07A-400A-RNF-2301
95111B	1		REPLACED HANGER 1-07A-400B-PN-2302
95111B	1		MODIFY HANGER 1-07A-400B-PN-2301
05111B	1		INSTALL HANGER 1-07A-400B-SR22
95111B	1		INSTALL HANGER 1-07A-400B-SR20
95111B	1		MODIFY HANGER 1-07A-400B-SR19
95111B	1		MODIFY HANGER 1-07A-5-0-402A-H12
95111B	1		INSTALL HANGER 1-07A-0-400B-SR18
95111B	1		INSTALL HANGER 1-07A-6-0-402A-H10
95111B	1		REPLACED HANGER 1-07A-400B-DE039
95111B	1		REPLACED HANGER 1-07A-400A-DE035
95111B	1		REPLACED HANGER 1-07A-400A-DE034
95111B	1		MODIFY HANGER 1-07A-400A-DE033
95111B	1		MODIFY HANGER 1-07A-400A-DE032
95111B	1		INSTALL HANGER 1-07A-400A-DE031
95111B	1		MODIFY HANGER 1-07A-400B-DE009
95111B	1		INSTALL HANGER 1-07A-400B-DE008

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95111B	1		INSTALL HANGER 1-07A-400B-H4135
95111B	1		REMOVED HANGER 1-07A-0-400B-JME-2301
95111B	1		REMOVED HANGER 1-07A-0-400B-PN-2304
95111B	1		REMOVED HANGER 1-07A-0-400B-SR14
95111B	1		MODIFY HANGER 1-07A-400B-DE064
95111B	1		REPLACED HANGER 1-07A-400A-DE063
95111B	1		MODIFY HANGER 1-11-400A-DE003
95111B	1		MODIFY HANGER 1-07A-400B-SR17
95111B	1		MODIFY HANGER 1-07A-400B-SR16
95111B	1		INSTALL HANGER 1-07A-6-0-400B-H48
95111B	1		MODIFY HANGER 1-07A-6-0-400B-H47
95111B	1		MODIFY HANGER 2-07A-1400B-JWC-0203
95111B	1		REPLACED HANGER 1-07A-400B-TLM-2111
95111B	1		MODIFY HANGER 2-07A-1400A-JWC-1606
95111B	1		MODIFY HANGER 1-07A-400B-DE006
95111B	1		MODIFY HANGER 1-07A-400B-DE010
051165	1		ADJUSTED SPRING SETTING HANGER 1-02A-1-0-403A-H12
97265C	1		MODIFY HANGER 0-14C-447A-H7038
97847C	1		ADJUSTED CAN SPRING HANGER 1-08-1-0-401A-H6

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
ASME SECTION XI - 1980
OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95098B	1		INSTALLED SHIM-HANGER 1-04A-0-479A-H20A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-479A-MSM-H1701
95098B	1		ADJUSTED CLEARANCE-HANGER 1-04A-0-479A-H22A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-NPS-H36
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-NPS-H37
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-H25A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-H26A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-479A-JEB-0401
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-479A-H27A
95098B	1		ADJUSTED CLEARANCE-HANGER 1-04A-0-479A-H29A
95098B	1		REMOVED HANGER 1-04A-0-480A-H30A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-H24B
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-478A-H1A
95098B	1		MODIFIED PER SKETCH-HANGER 1-04A-0-479A-EWD-H0101
95098B	1		INSTALLED HANGER 1-04A-0-479A-GPD-H0052
95098B	1		ADJUSTED U-BOLT AND TACK WELDED NUT HANGER 04A-0-479A-CMP-HC215

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95098B	1		INSTALLED SHIM-HANGER 1-04A-0-478A-H9A
95098B	1		ADJUSTED FOR PROPER CLEARANCE HANGER 1-04A-0-478A-H10A
95098B	1		INSTALLED HANGER 1-04A-0-478A-H11A
95098B	1		REWELDED LUGS-HANGER 1-04A-0-478A-H13A
95098B	1		REWELDED LUGS-HANGER 1-04A-0-478A-H14A
95098B	1		ADJUSTED FOR PROPER CLEARANCE HANGER 1-04A-0-478A-H17A
95098B	1		INSTALLED HANGER 1-04A-0-478A-GPD-H0053
95098B	1		INSTALLED HANGER 1-04A-0-478A-GPD-H0054
95098B	1		INSTALLED HANGER 1-59-0-478A-H15
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-H18A
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-479A-H20B
95098B	1		ADJUSTED FOR PROPER CLEARANCE HANGER 1-04A-0-478A-H22B
95098B	1		REMOVED HANGER 1-04A-0-479A-H28A
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-NPS-H26
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-479A-H25B
95098B	1		INSTALLED SHIM HANGER 1-04A-0-478A-H1B

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95098B	1		INSTALLED HANGER 1-04A-0-478A-H2B
95098B	1		REPLACED PIPE CLAMP BOLT 1-04A-0-478A-H3B
95098B	1		INSTALLED HANGER 1-04A-0-478A-H7B
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-H9B
95098B	1		ADJUSTED FOR PROPER CLEARANCE HANGER 1-04A-0-478A-H10B
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-H11B
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-H13B
95098B	1		ADJUSTED FOR PROPER CLEARANCE HANGER 1-04A-0-478A-H17B
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-H18B
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-CB-H0130
95098B	1		ADJUSTED U-BOLT FOR PROPER CLEARANCE HANGER 1-04A-0-478A-DRS-H1801
95098B	1		ADJUSTED SHOCK SUPPRESSOR HANGER 1-04A-0-478A-NPS-H35
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-478A-NPS-H10
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-478A-NPS-H35A
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-478A-NPS-H9
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-NPS-H34

REPAIRS AND REPLACEMENT LOG
UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-NPS-H22
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-NPS-H59
95098B	1		MODIFIED PER SKETCH HANGER 1-04A-0-478A-NPS-H19
95098B	1		REMOVED HANGER 1-04A-0-478-H53
95098B	1		REMOVED HANGER 1-04A-0-479A-NPS-H41
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-438B-SR63
95119B	1		REMOVED/REPLACED LUGS HANGER 1-03A-1-0-401A-SR19
95119B	1		REPLACED SNUBBERS HANGER 1-03A-1-0-400B-SR58
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-439A-DE060
95119B	1		MODIFIED PER SKETCH 1-03A-1-0-439A-H24
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-401A-H44
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-401B-DE057
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-401B-SR24
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-438B-H76
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-401B-SR23
95119B	1		INSTALLED NEW HANGER 1-03A-1-0-400A-SR52
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR61

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UNIT 1, RFO-12
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OCONEE NUCLEAR STATION

WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-H15
95119B	1		WELDED EXISTING WASHER PLATE INTACT HANGER 1-03A-1-0-400A-SR34
95119B	1		REMOVED HANGER 1-03A-1-0-439B-SR96
95119B	1		REMOVED LUGS 1-03A-1-0-438B-SR99
95119B	1		MODIFIED PER SKETCH-HANGER 1-03A-1-0-401A-SR72
95119B	1		REMOVED SADDLE HANGER 1-03A-1-0-400A-SR81
95119B	1		REMOVED HANGER 1-03A-1-0-400B-H60
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401A-H41
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-DE039
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-DE001
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-DE003
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-DE004
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-DE005
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-H66
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-H68
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-H71

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UNIT 1, RFO-12
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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439A-H103
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR2
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR3
95119B	1		REMOVED/REPLACE EXISTING HANGER 1-03A-1-0-401A-SR5
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR6
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR4
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-SR47
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-SR49
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR50
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR95
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR96
95119B	1		REMOVED HANGER 1-03A-401A-DE006
95119B	1		REMOVED HANGER 1-03A-401A-DE007
95119B	1		REMOVED HANGER 1-03A-401A-DE008
95119B	1		REMOVED HANGER 1-03A-401A-DE009
95119B	1		REMOVED HANGER 1-03A-401A-DE014

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		REMOVED HANGER 1-03A-1-0-439B-H16
95119B	1		REMOVED HANGER 1-03A-1-0-401A-H40
95119B	1		REMOVED HANGER 1-03A-1-0-437A-H69
95119B	1		REMOVED HANGER 1-03A-1-0-439B-ALD-1010
95119B	1		REMOVED/REPLACED EXISTING HANGER 1-03A-1-0-437A-H70
95119B	1		REMOVED HANGER 1-03A-401A-WCN-0501
95119B	1		REMOVED HANGER 1-03A-401A-WCN-0502
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-DE040
95119B	1		TIGHTENED LOOSE NUTS HANGER 1-03A-401B-DE041
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-DE042
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-DE048
95119B	1		INSTALLED HANGER 1-03A-401B-DE059
95119B	1		ADJUSTED SPRING CAN HANGER 1-03A-1-0-401B-H1
95119B	1		INSTALLED HANGER 1-03A-1-0-439A-H22
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439A-H23
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439A-H25

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		REMOVED/REPLACED EXISTING HANGER 1-03A-1-0-439B-H27
95119B	1		REMOVED/REPLACED EXISTING HANGER 1-03A-1-0-401B-SR30
95119B	1		INSTALLED HANGER 1-03A-401B-SR32
95119B	1		INSTALLED HANGER 1-03A-1-0-439A-SR39
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-SR41
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-AM-0501
95119B	1		REMOVED HANGER 1-03A-1-0-401B-SR33
95119B	1		REMOVED HANGER 1-03A-439C-RB-0401
95119B	1		INSTALLED HANGER 1-03A-1-0-437B-DE065
95119B	1		REMOVED HANGER 1-03A-1-0-401A-SR75
95119B	1		INSTALLED HANGER 1-03A-1-0-400A-SR79
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400B-SR85
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR88
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR89
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR90
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-MB-0701

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-SR91
95119B	1		INSTALLED HANGER 1-03A-401A-ADM-0100
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-400A-ADM-0200
95119B	1		REMOVED/REPLACED HANGER 1-03A-439C-BFB-0301
95119B	1		REMOVED/REPLACED HANGER 1-03A-0-437B-JWC-0301
95119B	1		REMOVED HANGER 1-03A-1-0-437B-H73
95119B	1		REMOVED HANGER 1-03A-1-0-437B-H74
95119B	1		REMOVED HANGER 1-03A-439C-H82
95119B	1		REMOVED HANGER 1-03A-1-0-439C-H100
95119B	1		REMOVED HANGER 1-03A-400B-WDB-0101
95119B	1		REMOVED/REPLACED HANGER 1-03A-401A-DE024
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401B-DE051
95119B	1		INSTALLED HANGER 1-03A-1-0-401A-SR9
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR10
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-SR11
95119B	1		MODIFIED PER SKETCH HANGER 1-N5R-401A-DE061
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401A-SR12

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-5R13
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-5R14
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401A-5R17
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401A-5R18
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401A-5R20
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401B-5R22
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401B-5R25
95119B	1		REMOVED/REPLACED HANGER 1-03A-1-0-401B-5R26
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401B-5R28
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-TLN-0502
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-401A-TLN-0503
95119B	1		REMOVED HANGER 1-03A-401A-DE017
95119B	1		REMOVED HANGER 1-03A-401A-DE020
95119B	1		REMOVED HANGER 1-03A-401A-DE026
95119B	1		REMOVED HANGER 1-03A-401A-DE030
95119B	1		REMOVED HANGER 1-03A-401B-DE052

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		REMOVED HANGER 1-03A-401B-AM-1001
95119B	1		REMOVED HANGER 1-03A-401B-AM-1102
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400B-SR59
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-401A-H45
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-H46
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-H47
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-H49
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400B-H55
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400B-H59
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437A-H64
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-437B-H72
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-438B-H77
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-H78
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-H79
95337B	1		MODIFIED FOR SKETCH HANGER 1-56-0-437B-RTB-1002
95337B	1		INSTALLED HANGER 1-56-0-437B-SR19

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95337B	1		INSTALLED HANGER 1-56-0-437B-DE019
95337B	1		REPLACED HANGER 1-56-0-437E-GMT-1401
95337B	1		INSTALLED HANGER 1-56-0-438B-SR10
95337B	1		MODIFIED PER SKETCH HANGER 1-56-0-438C-SR12
95337B	1		MODIFIED PER SKETCH HANGER 1-56-0-437B-SR21
95337B	1		INSTALLED HANGER 1-56-0-437B-SR18
95337B	1		MODIFIED HANGER 1-56-4-0-437B-H2
95337B	1		MODIFIED HANGER 1-56-0-438C-SR13
95337B	1		MODIFIED HANGER 1-53B-4380-DE088
95337B	1		MODIFIED HANGER 1-56-437B-TLM-1019
95337B	1		INSTALLED HANGER 1-56-0-439A-SR22
95337B	1		REMOVED AND REPLACED/REALIGNED U-BOLT 1-56-0-437B-RTB-1003
95337B	1		REMOVED HANGER 1-56-5-0-437B-H55
95337B	1		MODIFIED PER SKETCH 1-53B-4380-LCC-1503
95337B	1		REMOVED HANGER 1-56-438C-DE006
95337B	1		MODIFIED PER SKETCH 1-56-4-0-437B-H3
95337B	1		INSTALLED HANGER 1-56-0-437B-DE018

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439C-H102
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-SR51
95119B	1		REPLACED/REALIGNED PIPE CLAMP HANGER 1-03A-1-0-400A-SR53
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400B-SR55
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-439B-SR64
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-SR71
95119B	1		INSTALLED HANGER 1-03A-1-0-400B-DE062
95119B	1		INSTALLED HANGER 1-03A-1-0-400B-H54
95119B	1		MODIFIED PER SKETCH HANGER 1-03A-1-0-400A-H38
95119B	1		REPLACED HANGER 1-53B-435B-EMO-H43
95066B	1		INSTALLED HANGER 1-54A-0-435B-DE014
95066B	1		INSTALLED HANGER 1-54A-0-435B-DE015
95066B	1		INSTALLED HANGER 1-54A-0-435B-DE016
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-444-H1
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-435B-H21
95066B	1		REPLACED HANGER 1-54A-3-0-435B-H22

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
950668	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-436D-R6
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-435B-R9
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-436D-R27
95066B	1		REMOVED HANGER 1-54A-0-435B-DE12
95066B	1		REMOVED HANGER 1-54A-3-0-435B-R10
95066B	1		REPLACED HANGER 1-54A-0-435B-DE06
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-0-435B-DE10
95066B	1		INSTALLED HANGER 1-54A-435B-DE020
95066B	1		INSTALLED HANGER 1-54A-435B-DE021
95066B	1		MODIFIED HANGER PER SKETCH 1-54A-3-0-435B-R1
95066B	1		REPLACED HANGER 1-54A-3-0-435B-R3
95066B	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-435B-R4
95066B	1		REMOVED HANGER 1-54A-3-0-435B-H37
950668	1		REMOVED HANGER 1-54A-0-435B-DE08
95066B	1		INSTALLED HANGER 1-54A-3-0-439A-H21
95066B	1		INSTALLED HANGER 1-54A-3-0-435B-R8

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
950668	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-439A-H23
950668	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-439A-H24
950668	1		MODIFIED PER SKETCH HANGER 1-54A-3-0-439A-H25
950668	1		REPLACED HANGER 1-54A-3-0-439A-R11
950668	1		REPLACED HANGER 1-54A-0-439A-R12
950668	1		REPLACED HANGER 1-54A-0-439A-R13
950668	1		MODIFIED PER SKETCH HANGER 1-54A-0-444-R14
950668	1		MODIFIED PER SKETCH HANGER 1-54A-0-444-R15
950668	1		MODIFIED HANGER 1-54A-0-439A-R17
950668	1		MODIFIED HANGER 1-54A-0-439A-R21
950668	1		MODIFIED HANGER 1-54A-3-0-444-R22
950668	1		REMOVED HANGER 1-54A-3-0-439A-H18
950668	1		REMOVED HANGER 1-54A-3-0-439A-H22
950668	1		REMOVED HANGER 1-54A-3-0-439A-H26
950668	1		REMOVED HANGER 1-54A-3-0-444B-RHG-0301
950668	1		INSTALLED HANGER 1-54A-A-439A-0E023

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
95066B	1		REMOVED HANGER 1-54A-0-439D-RAB-2601
95066B	1		MODIFIED HANGER 1-54A-3-0-439C-H5
95066B	1		MODIFIED HANGER 1-54A-3-0-439C-H6
95066B	1		MODIFIED HANGER 1-54A-3-0-439C-H11
95066B	1		MODIFIED HANGER 1-54A-3-0-439C-H13
95066B	1		MODIFIED HANGER 1-54A-0-439C-DE022
95066B	1		REMOVED HANGER 1-54A-0-3-439C-R23
95066B	1		REMOVED HANGER 1-54A-0-3-439C-R24
95066B	1		REMOVED HANGER 1-54A-0-3-439C-R25
97521	1		MODIFIED/SKETCH HANGER 1-01A-0-401A-DE030
97521	1		MODIFIED/SKETCH HANGER 1-01A-0-401A-TWE-1279
97521	1		MODIFIED/SKETCH HANGER 1-01A-401A-DE011
97521	1	*	MODIFIED HANGER 1-01A-2-1-0-401A-SR2204
97521	1		MODIFIED HANGER 1-01A-0-401A-DE053
97521	1		MODIFIED HANGER 1-01A-2-1-0-401A-SR2202
97521	1		MODIFIED HANGER 1-01A-0-401A-JGM-1201

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		MODIFIED HANGER 1-01A-0-401A-JGM-1202
97521	1		MODIFIED HANGER 1-01A-2-1-0-401A-SR7
97521	1		REMOVED HANGER 1-01A-0-401A-DE013
97521	1		INSTALLED HANGER 1-01A-0-401A-DE018
97521	1		INSTALLED HANGER 1-01A-0-401A-DE017
97521	1		MODIFIED HANGER 1-01A-0-400E-JWC-2401
97521	1		MODIFIED HANGER 1-01A-0-401B-JWC-1801
97521	1		MODIFIED HANGER 1-01A-0-401A-DE008A
97521	1		MODIFIED HANGER 1-01A-0-401A-DE012
97521	1		INSTALLED HANGER 1-01A-401A-DE052
97521	1		REPLACED HANGER 1-01A-401A-DE014
97521	1		MODIFIED HANGER 1-01A-2-1-0-401A-SR2205
97521	1		INSTALLED HANGER 1-01A-0-401A-DE015
97521	1		MODIFIED HANGER 1-01A-0-401A-GLJ-2503
97521	1		REMOVED HANGER 1-01A-3-0-401A-HTT-2301
97521	1		REMOVED HANGER 1-01A-3-0-401A-HTT-2401

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		REMOVED HANGER 1-01A-3-0-401A-H10
97521	1		REMOVED HANGER 1-01A-3-0-401A-H12
97521	1		INSTALLED HANGER 1-01A-0-403C-JH-1516B
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H17
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H21
97521	1		ADJUSTED SPRING CAN COLD SETTING HANGER 1-01A-3-0-401A-H22
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H14
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H15
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H13
97521	1		MODIFIED HANGER 1-01A-3-0-401A-H11
97521	1		REMOVED HANGER 1-01A-403C-JH-1520
97521	1		INSTALLED HANGER 1-01A-403C-JH-1515
97521	1		INSTALLED HANGER 1-01A-403C-JH-1514
97521	1		INSTALLED HANGER 1-01A-403C-DE075
97521	1		MODIFIED HANGER 1-01A-0-403C-JH-1513
97521	1		INSTALLED HANGER 1-01A-403C-DE070

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		INSTALLED HANGER 1-01A-403C-DE072
97521	1		MODIFIED HANGER 1-01A-0-403C-JH-1519
97521	1		MODIFIED HANGER 1-01A-403C-JH-1518
97521	1		MODIFIED HANGER 1-01A-0-403C-JH-1516A
97521	1		MODIFIED HANGER 1-01A-1-2-0-401A-H15
53576	1		REPOSITIONED HANGER 1-03-0-401B-EM0-H25
97521	1		MODIFIED HANGER 1-01A-1-3-0-401A-H16
97521	1		MODIFIED HANGER 1-01A-1-2-0-401A-H17
97521	1		INSTALLED HANGER 1-01A-1-4-0-401A-H19
97521	1		INSTALLED HANGER 1-01A-0-441-H42
97521	1		INSTALLED HANGER 1-01A-0-441-H43
97521	1		RESET SPRING CAN/HANGER 1-01A-1-1-0-401A-H7
97521	1		MODIFIED HANGER 1-01A-0-401A-EM0-H15
97521	1		INSTALLED HANGER 1-01A-1-1-0-401A-H8
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H33
97521	1		REPLACED SPRING CAN HANGER 1-01A-1-1-0-401A-H34

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WORK REQUEST #	UNIT	ASME	DESCRIPTION
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H9
97521	1		MODIFIED HANGER 1-01A-1-2-0-401A-H14
97521	1		MODIFIED HANGER 1-01A-1-2-0-401A-H48
97521	1		REPLACED HANGER 1-01A-1-2-0-401A-H13
97521	1		INSTALLED HANGER 1-01A-1-2-0-401A-H49
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H35
97521	1		MODIFIED HANGER 1-01A-1-1-0-401A-H40
97521	1		REPLACED HANGER 1-01A-1-1-0-401A-H43